LECTURES

ON

DIET AND REGIMEN.

[*Entered at Stationers' Hall.*]

LECTURES

ON

DIET AND REGIMEN:

BEING

A SYSTEMATIC INQUIRY

INTO THE MOST RATIONAL MEANS OF PRESERVING HEALTH AND PROLONGING LIFE:

TOGETHER WITH

PHYSIOLOGICAL AND CHEMICAL EXPLANATIONS,

CALCULATED CHIEFLY

FOR THE USE OF FAMILIES,

IN ORDER TO BANISH THE PREVAILING ABUSES AND PREJUDICES IN MEDICINE.

THE SECOND EDITION,

IMPROVED AND ENLARGED WITH CONSIDERABLE ADDITIONS.

By A. F. M. WILLICH, M. D.

Qui ſtomachum regem totius corporis eſſe
Contendunt, vera niti ratione videntur;
Hujus enim tenor validus firmat omnia membra;
At contrà ejuſdem franguntur cuncta dolore.
SERENI SAMMONICI, *de Medicina Præcepta ſaluberrima.*

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1799.

THIS WORK

IS DEDICATED,

TO THOSE MOTHERS AND GUARDIANS OF FAMILIES,

WHOSE

GREATEST PRIDE AND HAPPINESS IT IS,

TO REAR

HEALTHY AND VIRTUOUS CHILDREN,

AND

TO THOSE FRIENDS OF SOCIETY AND THEMSELVES,

WHO ARE SOLICITOUS

TO PRESERVE THEIR HEALTH,

AND TO ADOPT

THE PARENTAL HINTS OF NATURE,

RATHER THAN SUBMIT TO

THE PALLIATIVE RELIEF OF ART.

BRITISH MUSEUM

THE firſt Edition of theſe Lectures having met with a degree of approbation beyond the moſt ſanguine hopes of the Author, he has teſtified his grateful ſenſe to a diſcerning Public, not only by correcting and improving every page of the Work, but likewiſe by enlarging and rendering it as complete as the limits of a ſingle volume would admit.

Many important and uſeful articles have been added, eſpecially in the fifth Chapter, "Of Food and Drink." The principal *new ſubjects* the Reader will, on conſulting the Alphabetical Index, find under the terms—*Arrow-root*—*Artichokes*—*Aſparagus*—*Barley*—*Beans*—*Beet-root*—*Cow-pox*—*Conſumption*—*Exerciſe*—*Figs*—*Game*—*Lobſters*—*Manna-graſs*—*Metallic Tractors*—*Millet*—*Oats*—*Oil*—*Olives*—*Parſnips*—*Rice*—*Sago*—*Salſafy*—*Salt*—*Skirret-root*—*Small-pox*—*Tamarinds*—*Vinegar*, &c. &c.

The quotations tranſlated from Dr. Mead's "Medical Precepts," and inſerted in the conclu-

ſion of theſe Lectures, will be deemed intereſting by every reflecting mind.

To this edition the Author has added a "*Poſtſcript*," to which he refers the Reader with reſpect to the limited deſign of the preſent book, and the practical tendency of a new work, "On the Dietetic Treatment and Cure of Diſeaſes;" which will contain the farther application of theſe Lectures in a diſeaſed ſtate of the body.

With this view, he has thought proper to ſubjoin a ſeries of *Queries*, addreſſed to thoſe patients who are anxious to give an accurate and ſatisfactory account of their diſorder, when conſulting medical men, eſpecially if they cannot have the benefit of an interview.

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ADVERTISEMENT TO THE FIRST EDITION.

THESE Lectures, with the exception of the Eighth and Ninth Chapters, were delivered laſt winter* at Bath, and in the ſpring at Briſtol, to numerous and reſpectable audiences. The Author had no intention, at that time, to publiſh them: but as he found no Work, in the Engliſh language, comprehending ſuch a ſyſtematic view of the various and important objects which came more immediately under his conſideration, and conceived that the diſſemination of the rules ſelected by him might be generally uſeful, he was induced to alter his reſolution, and ſubmit them to the candour of the Public.

To many Engliſh and German writers he muſt acknowledge his obligations, in the compoſition of his Work. Among the former, he has occaſionally availed himſelf of the excellent Writings of PRIESTLEY, on the ſubject of '*Air and Weather*;' of FOTHERGILL and VAUGHAN, on '*Dreſs*;' and of ARMSTRONG, CULLEN, and FALCONER, on '*Food and Drink*.' To Dr. FOTHERGILL alſo, on the ſubject of '*Sleeping and Waking*,' he is much indebted, as well as to Mr. ADAMS's uſeful Treatiſe on the '*Treatment and Preſervation of the Eyes*.'

Beſide the valuable obſervations drawn from all theſe ſources, he has been greatly aſſiſted by the opinions of ſeveral German writers, viz. INGENHOUZ, HAHNEMANN, HUFELAND, MARCARD, SOEMMERING, UNZER, ZIMMERMANN, and others; having derived conſiderable advantage from the

* In the months of January and February 1798.

general result of their respective inquiries on the subject of Diet and Regimen.

Although it can scarcely be expected that a Work of this nature should be perfect, or free from inaccuracy, the Author has spared no pains to render it deserving of the public favour, and trusts it will be found a domestic guide both to families and individuals.

Should the rules and cautions interspersed throughout tend, in the smallest degree, to increase the knowledge of the inquisitive, dissuade the unwary from injurious habits, or rescue the sensualist from the brink of destruction, the exertions of the Author will be amply compensated.

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INTRO-

INTRODUCTION.

On the preſent State of Medicine as a Science.

WE apparently live in an age, when every branch of human knowledge is reduced to a popular ſyſtem; when the moſt important ſciences lay aſide the garb of pedantry and myſticiſm; when, in ſhort, the ſources of information are open to every rank, and to both ſexes. An improvement, which is ſo conſpicuous, muſt ultimately be attended with the moſt deſirable and extenſive effects.

Among other beneficial purſuits to render the comforts of life more numerous and permanent, we have occaſion to obſerve, that Natural Philoſophy and Chemiſtry contribute a principal ſhare in ſpreading uſeful knowledge among all ranks of ſociety.

Since Medicine, conſidered as a ſcience, which reſts upon practical rules of experience, is in a great meaſure founded upon Natural Philoſophy and Chemiſtry, it will be allowed, that with the daily progreſs of the latter, Medicine alſo muſt neceſſarily partake of their improvements, and

continually receive acceſſions conducive to its further perfection.

With the progreſſive increaſe of refinement and luxury, a certain weakneſs and indiſpoſition, whether real or imaginary, has infeſted ſociety in the character of a gentle epidemic. It cannot properly be called a diſeaſe, but rather an approximation to an infirm ſtate, which almoſt involuntarily compels man to reflect upon the relative ſituation of his phyſical nature, to acquire correct ideas on health, diſeaſe, and the means of prevention or relief, and thus imperceptibly to become his own guide.

Every individual of any penetration now claims the privilege of being his own phyſician:—it is not unfaſhionable to form a *certain* ſyſtem concerning the ſtate of our own health, and to conſider it as the criterion, by which we may judge of ourſelves and others, of patients and their phyſicians.

Formerly, people were not accuſtomed to think of the phyſical ſtate of their body, until it began to be afflicted with pain or debility: in which caſe, they entruſted it to the practitioner in Phyſic, as we deliver a time-piece to a watchmaker, who repairs it according to the beſt of his knowledge, without apprehending, that its owner will be at the trouble of thinking or reaſoning upon the method, which he judged to be moſt proper.

In our times, we frequently undertake the charge of preſcribing medicines for ourſelves: and the natural conſequence is, that we ſeldom are able to tell,

tell, whether we are healthy or diſeaſed; that we truſt as much, if not more, to ourſelves than to the phyſician, who is only ſent for occaſionally; and that we cannot conceive him to be perfectly free from the ſyſtems of the ſchools, from ſelf-intereſt, or profeſſional motives. Thus, by an acquaintance with medical ſubjects, which of itſelf is laudable, not only the ſkill of the phyſician is frequently thwarted, but the recovery of the patient unhappily retarded, or at leaſt rendered more difficult.

No diſeaſe is now cured without demonſtration; and he who can neither diſcover nor comply with the peculiar ſyſtem of health adopted by his patient, may indeed act from motives dictated by reaſon and humanity; but his ſucceſs as a *practical phyſician*, in the common acceptation of that phraſe, muſt ever remain problematical. Yet this general propenſity to inveſtigate medical ſubjects, if it were properly directed and gratified, might be attended with very happy effects. For the medical art ought not to be ſubject to an imperious and faſcinating demon, whoſe labours are chiefly carried on in the dark receſſes of myſtery, whom we know only from his baneful influence, as he ſpares no objects of prey, and holds his votaries in a perpetual ſtate of dependence!

"The veil of myſtery," ſays a modern popular writer, "which ſtill hangs over Medicine, renders it not only a conjectural, but even a ſuſpicious art.

This has been long ago removed from the other ſciences, which induces many to believe, that Medicine is a mere trick, and that it will not bear a fair and candid examination. Medicine, however, needs only to be *better* known, in order to ſecure the general eſteem of mankind. Its precepts are ſuch as every wiſe man would chooſe to obſerve, and it forbids nothing but what is incompatible with true happineſs."

Obſervations on the general Laws of Nature.

If we reflect upon the admirable uniformity which prevails through the works of nature, both in the production and diſſolution of matter, we find that ſhe invariably moves in a circle; that in the perpetual conſtruction, as well as in the ſubſequent demolition of bodies, ſhe is always equally new and equally perfect; that the ſmalleſt particle, though inviſible to our eyes, is uſefully employed by her reſtleſs activity; that death itſelf, or the deſtruction of forms and figures, is no more than a careful decompoſition and a deſigned regeneration of individual parts, in order to produce new ſubſtances, in a manner no leſs ſkilful than ſurpriſing. We further obſerve, that in the immenſe variety of things, in the inconceivable waſte of elementary particles, there nevertheleſs prevails the ſtricteſt œconomy; that nothing is produced in vain, nothing conſumed without a cauſe. We clearly perceive that all nature is united by indiſſoluble

ties;

ties; that every thing exists for the sake of another, and that no one thing can exist without its neighbour. Hence we justly conclude, that man himself is not an insulated being, but that he is a necessary link in the great chain, which connects the universe.

Nature is our safest guide, and she will be so with greater certainty, as we become better acquainted with her operations, especially with respect to those particulars which more nearly concern our physical existence. Thus, a source of many and extensive advantages will be opened; thus we shall approach to our original destination—namely, that of living long and healthy.

On the contrary, as long as we move in a limited sphere of knowledge; as long as we are unconcerned with respect to the causes which produce health or disease, we are in danger, either of being anxiously parsimonious, or prodigally profuse of those powers, by which life is supported. Both extremes are contrary to the purpose of nature. She teaches us the rule of just œconomy;—we, being a small part of her great system, must follow her example, and expend neither too much nor too little of her treasures.

Although it be true that our knowledge of nature is still very imperfect, yet this circumstance ought not to deter us from investigating the means which may lead to its improvement.

We are aſſiſted by the experience of ſo many induſtrious inquirers, of ſo many ſound philoſophers, that we may flatter ourſelves with the hopes of diſcovering ſome of her hidden ſecrets, and of penetrating ſtill further into her wonderful receſſes. This, however, cannot be accompliſhed, without much patience and perſeverance in the ſtudent.

All men, it is true, have not ſufficient time and opportunities to acquire an accurate and extenſive knowledge of nature; but thoſe are inexcuſable, who remain entire ſtrangers to her ordinary operations, and particularly if they neglect to cultivate a proper acquaintance with the conſtitution of their own frame. If, indeed, we were fixed to the earth like the trees by their roots, or if from mere animal inſtinct we were ſtimulated to inquire into the cauſes of our phyſical life, we then ſhould vegetate, or live like plants or irrational animals. But, in the character of creatures, who ought to chooſe and to reject agreeably to the dictates of reaſon, a more aſſiduous and minute ſtudy of nature, as well as of our own frame, is indiſpenſable; becauſe the human body cannot ſubſiſt, unleſs we ſecond her intentions and co-operate with her beneficent efforts.

Difference

Difference of Opinions on Medical Subjects.

It is not unfrequently objected, that Medicine itſelf is an uncertain, fluctuating, and precarious art. One medical ſchool, for inſtance, conſiders the maſs of the fluids as the primary cauſe of all diſeaſes; another aſcribes them to the irregular action of the ſolids, and particularly the nerves; ſome again conſider that as the cauſe of the diſorder, which many are inclined to repreſent as the effect. Thus, different ſchools propagate different tenets relative to the origin of diſeaſes; though ultimately, with reſpect to matters of fact, they muſt all neceſſarily agree. Nor is this diverſity of opinions in the leaſt degree detrimental to the practical department of Medicine; provided that we do not regulate the mode of treatment altogether by hypothetical notions. Of what conſequence is it to the patient, whether his phyſician imagines the nerves to be fine tubes, filled with a ſubtle fluid, or not?—whether he believes that catarrhs ariſe from noxious particles floating in the air,—or from catching cold?—or whether he is prejudiced in favour of this or that particular theory of fevers?—It is a ſufficient ſecurity to the patient, if his phyſician be thoroughly acquainted with the ſymptoms of the diſeaſe, and be able to diſtinguiſh them from thoſe of any other

malady. In this reſpect, the medical art is truly excellent, and without a rival; for the nature of diſeaſes remains invariably the ſame. The accurate obſervations made by Hippocrates, two thouſand years ago, on the progreſs and ſymptoms of diſeaſes, recur to the medical practitioner of the preſent day, in a manner ſufficiently regular and uniform. And, in fact, how ſhould it be otherwiſe; when nature always purſues the ſame path, whether in a healthy or diſeaſed ſtate of the body?

Here again it will be aſked, whence does it happen that two phyſicians ſeldom agree in opinion, with regard to the caſe of the ſame patient? This queſtion may be briefly anſwered, by claiming the ſame right for the medical profeſſion, which is aſſumed by theologians in conteſted points of divinity; by lawyers in arguing any part of their code, which is not perfectly plain; and by philoſophers who maintain different opinions on the ſame ſubject in Metaphyſics; for inſtance, that of *ſpace* and *time*. But there are more forcible reaſons which enable us, in ſome meaſure, to account for this diverſity of opinions in Medicine. One of the phyſicians, perhaps, is in the habit of viſiting fifty patients in a forenoon, ſo that he has not ſufficient time to inveſtigate minutely the nature and origin of the diſeaſe; while another of leſs extenſive practice is enabled to do more juſtice to his patients, by attending to their complaints with proper leiſure

and

and accuracy. One of them ſhall diſtinguiſh ſome of the leading ſymptoms, and without heſitation pronounce, that he has diſcovered the true ſeat of the malady; but as many diſeaſes of a different nature are attended with ſimilar and common ſymptoms, there is no ſmall danger of confounding the one with the other. Another ſhall enter the patient's room with a preconceived opinion on the ſubject of ſome prevailing epidemic, or with his head probably full of the caſe which occupied his attention in the laſt viſit. With theſe impediments, how difficult will it be to inſtitute a cool and unbiaſſed inquiry? If, again, both ſhould happen to be called in at different ſtages of the diſorder, each of them would preſcribe a different method of cure, and the judgment of him who was laſt conſulted, would in all probability be the moſt correct. Or laſtly, a phyſician may be ſent for, who, having commenced his ſtudies about the middle of this century, has not (from want of time or inclination) ſufficiently attended to the more recent diſcoveries of this inquiſitive age; how can it then be expected, that he ſhould agree in opinion with thoſe, whoſe knowledge has been improved by the numberleſs new facts and obſervations lately made in phyſics, particularly in Chemiſtry?

Origin and Cauſes of Diſeaſe.

MAN is ſubject to the ſame deſtructive agents from without, by which the lower animals are affected; but there is no doubt, that he is more eaſily and frequently expoſed to diſeaſes than theſe. *Firſt*, The inferior creatures are unqueſtionably provided with a more active inſtinct, by which nature teaches them, from their very birth, to avoid every thing that may prove hurtful, and to chooſe whatever may have a ſalutary influence on their mode of living. Few traces of this beneficial inſtinct can be diſcovered in the human race. Our own experience, or the inſtructions of others, which are likewiſe founded upon experience, muſt gradually teach us the wholeſome or pernicious qualities of the objects of the material world. Reaſon, indeed, that peculiar faculty of man, indemnifies him, in a great meaſure, for the want of this inſtinct; it directs his choice in purſuing what is uſeful, and in avoiding what is injurious. Yet, at the ſame time, the want of inſtinct in man, is the ſource of many ſufferings in the earlier years of his life. He is born without covering, to withſtand the effects of climate; without arms, to defend himſelf in his helpleſs ſtate, and without inſtinct, if we except that of ſucking. He remains much longer

longer incapable of providing for his ſelf-preſervation, and ſtands in need of the aſſiſtance of his parents for a much greater number of years, than any other animal with which we are acquainted. Although his parents, in general, acquit themſelves of this charge with much greater ſolicitude and tenderneſs than the lower animals, yet our imperfect inſtinct is productive of much miſchief to children, from ignorance and ill-directed tenderneſs in parents and nurſes. Children are frequently furniſhed with articles of food and dreſs which, at a more advanced age, nouriſh the ſeeds of diſeaſe and diſſolution. Thus, many infants are indebted for their obſtructions in the meſentery, and the conſumptive habit attending them, to their uninformed and over-anxious parents or friends, who commit daily errors with regard to the quantity and quality of the aliment, which in many inſtances they ſo liberally adminiſter to the objects of their care; even though it be of an indigeſtible nature.

In the *ſecond* place, it is a fact univerſally admitted, that mankind, eſpecially in large and populous towns, have much degenerated in bodily ſtrength, energy of mind; and in their capacity of reſiſting the noxious agency of powers which affect them from without.

The progreſſive cultivation of the mind, together with the daily refinements of habits and manners, are ever accompanied with a proportionate

increaſe of luxury. But as this change, from a robuſt to a more relaxed ſtate of life, has produced no difference in the *cauſes* generating diſeaſe, to which we are even more ſubject than formerly, we muſt neceſſarily ſuffer by the concomitant *effects*. For though luxury has aſſiſted us in preventing the temporary effects of external agents, ſuch as cold, heat, rain, &c. and we can occaſionally guard ourſelves againſt their ſeverity, we are, upon the next return of them, attacked with much greater violence, than if we had been more habituated to their influence. And this ſtate of things has imperceptibly introduced the uſe of many articles, both of dreſs and aliment, which in their conſequences often prove detrimental to health. Hence we find, that in proportion as the refinements of luxury increaſe in a nation, the number and variety of diſeaſes alſo increaſe. On the contrary, the more uncivilized a people continue, and the more their habits and cuſtoms approximate to a ſtate of nature, the leſs are they affected by the cauſes of diſeaſe.

In the *third* place, we obſerve among the human race a greater number of prevailing paſſions, and man is more violently, and, for the time of their duration, more obſtinately governed by them, than any other living creature. Theſe emotions variouſly affect the human body. But the moſt noxious and oppreſſive than any other of all the paſſions, are *terror* and *grief*: the former of which

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is ſometimes ſo violent as to threaten immediate deſtruction. Controlled by their powerful influence, and hurried away by the impulſe of the moment, the mind is rendered incapable of judging, and of properly ſelecting the means of allaying thoſe paſſions. Hence the remedies, to which we have recourſe during the prevalence of paſſion, and which then appear to us the moſt proper, frequently lay the foundation of innumerable diſorders, both of body and mind.

A *fourth* ſource of diſeaſes among mankind, are various ſpecific contagions; and perhaps the greater number of theſe originate in the atmoſphere which ſurrounds us. This is highly probable, at leaſt with reſpect to marſhy exhalations, and the effluvia of regions rendered unwholeſome by different manufacturing proceſſes. Another claſs of contagious miaſmata conſiſts of thoſe which cannot be traced to any certain origin. Indeed, we daily obſerve their migrations; we perceive them moving from one individual to another, without fixing any ſtationary reſidence: yet they have hitherto fruſtrated every attempt made towards their extirpation. Of this unſettled nature are, the ſmall-pox, the meaſles, the hooping-cough, the influenza, and many other epidemics. The firſt of them, namely the ſmall-pox, has of late years been very ſucceſſfully treated; and it is well known that ſome of the moſt ingenious practitioners in Italy and Germany are, at this moment, employed in a ſerious attempt,

attempt, wholly to extirpate this contagion from the Continent of Europe; an object which has formerly been accompliſhed in the caſes of the plague and leproſy *.

On

* The means employed by our anceſtors, in ſubduing the virulence of theſe malignant diſorders, conſiſted chiefly in ſeparating every infected perſon from the healthy, and preventing all intercourſe between them. For this purpoſe, many thouſand houſes of reception were then eſtabliſhed and ſupported at the public expence, in every country of Europe; the diſeaſed were inſtantly and carefully removed to thoſe houſes, and not permitted to leave them till perfectly cured. A meaſure ſomewhat ſimilar to this has lately been propoſed, and laid before the Plenipotentiaries of the Continental Powers aſſembled at Raſtadt, by Profeſſor Junker, Dr. Fauſt, and other German Phyſicians. This propoſal, however, differs eſſentially from the former method of extirpating contagious diſorders: as, according to the modern plan, we underſtand every individual, whether willing or not, muſt ſubmit to be inoculated for the ſmall-pox.

To deprive this loathſome diſeaſe of its deſtructive power, another method, perhaps more plauſible and leſs compulſory, has been lately attempted in this country, and ſtrongly recommended by Drs. Jenner, Pearson, Woodville, and other practitioners. I allude to the inoculation for the *cow-pox*. It is ſincerely to be wiſhed, that their humane efforts may be crowned with ſucceſs: and if it be true that perſons inoculated for the cow-pox are *for ever* exempt from the infection of the *ſmall-pox*, and that this artificial tranſlation of morbid matter from the brute to the human ſubject is not attended with danger, it is of little conſequence whether the cow-pox originate from any cutaneous diſeaſe of the milker, or from the greaſe of horſes. For my part, I am not very ſanguine in my expectations, which have often

On the Doctrine of Temperaments.

SINCE it is eſtabliſhed by numberleſs facts, that the temperaments, as well as the diſeaſes, of whole nations, are in a great meaſure influenced by their ordinary articles of food, it will no longer be doubted, that the moſt important conſequences reſult from our aliment, whether of food or drink.

As the *doctrine of temperaments* is in itſelf highly curious and intereſting, I think this a proper place for introducing ſome practical remarks, tending to illuſtrate that ſubject, and preſenting a conciſe view of it, chiefly derived from the learned annotations of the celebrated Profeſſor SÖMMERING, of Mayence.

" The doctrine of temperaments," ſays he, " in the general acceptation of that term, muſt be allowed to have greatly miſled the ancient phyſicians, and particularly thoſe who lived before the time

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often been diſappointed on ſimilar occaſions; and till I can perſuade myſelf of the perfect analogy ſubſiſting between the two diſeaſes, nay of their homogeneous nature, I ſhall patiently wait for a greater number of facts tending to confirm the truth of the hypotheſis. This, however, in my opinion, can be decided only, when the *ſmall-pox* ſhould appear as the *prevailing epidemic*.

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of *Galen*. We are not, however, to infer from this, that the doctrine itſelf is without foundation. They erred not, by admitting the exiſtence of temperaments; for that ſeems now to be fully eſtabliſhed; but by too great a fondneſs for *generalization*; by limiting the number of them to *four*, and fixing their attention in this diviſion ſimply on the nature and compoſition of the blood, inſtead of regarding the whole animal œconomy. Thus, for inſtance, they knew many parts of the human body ſcarcely by their names, and were little, if at all, acquainted with the great influence of the nerves; while our modern phyſicians pay an almoſt extravagant homage to theſe faſhionable co-operators in diſeaſes, and frequently forget, in their attention to their favourites, the more important, at leaſt more obvious, parts of the fluids.

"There is a certain line obſervable in all the more perfect animals, by which nature is regulated in performing the functions of body and mind; in preſerving or impairing the health, and in exerting all thoſe energies of life, on which the happineſs of the creature depends. This line is various in different individuals, and the variety cannot be completely explained on the principle of the ancients, by a difference in the qualities of the blood alone; though a human body of moderate ſize contains not leſs than thirty pounds weight of that fluid. Other terms muſt therefore be ſubſtituted for their *ſanguine*, *choleric*, *phlegmatic*, and *melancholy* temperaments;

peraments; but before we attempt them, it will be neceſſary to take a more extenſive view of the œconomy of man.

"The cauſes of the difference of temperaments are various: *Firſt*; a difference in the nervous ſyſtem, with reſpect to the number of the nervous fibres, their ſtrength, and ſenſibility. A large brain, coarſe and ſtrong nerves, and great general ſenſibility, have always been found to be the marks of a *choleric* or *cholerico-ſanguine* diſpoſition. Hence proceeds the quickneſs of perception and capacity of knowledge in perſons of this claſs, accompanied with great acuteneſs and ſtrength of judgment, from the multitude of their ideas of compariſon. Theſe qualities are, however, in ſome meaſure counterbalanced by a violent propenſity to anger, and impatience under ſlight ſufferings of body or mind. Medicines ought, therefore, to be cautiouſly adminiſtered to them, and in ſmall quantities only. A diminutive brain and very delicate nerves have generally been obſerved to be connected with dull ſenſes, and a phlegmatic languor—ſometimes with a taint of melancholy. To affect the organs of ſuch perſons, the impreſſion of external objects muſt be ſtrong and permanent. Their judgments are often childiſh from the want of ideas, and hence they are ſeldom able to make great progreſs in ſcience. They are, however, more fit to endure labour, and the injuries of climate; conſequently their

medicines ſhould be ſtrong, and adminiſtered in large quantities.

" *Secondly:* Difference of irritability is another cauſe of difference of temperament. When the fibres are excited by the ſlighteſt ſtimulus to quick and permanent contraction, we may juſtly infer the exiſtence of a choleric diſpoſition; while a phlegmatic temper diſplays itſelf by oppoſite ſymptoms; the muſcles being ſlowly contracted, and excited with difficulty by the moſt powerful ſtimulus.

" *Thirdly:* The fibres and membranes of a phlegmatic perſon are remarkably ſoft to the touch; thoſe of a melancholic perſon hard and dry, with greater tone and facility of contraction.

" *Fourthly:* There appears to be ſufficient reaſon for the opinion, that an *electric* principle is diſperſed through the atmoſphere, which is communicated to the body, in different degrees, by reſpiration; which ſupplies the fibres with their natural tone; gives a more lively motion to the veſſels; and increaſes the ſerenity of the mind. This principle does not exiſt in the atmoſphere in equal quantities in all countries, nor even in the ſame country at different ſeaſons or hours of the day. Thus, during the influence of the *Sirocco* in *Sicily*, all the fibres are oppreſſed by languor; but when the air becomes more ſerene and elaſtic, the natural energy of body and mind returns. All men do not inſpire this electric matter in equal

quantities, and thus a remarkable difference of temperament is produced.

"*Fifthly:* To these causes must be added the different nature and quantity of the blood. Thus, when the blood is highly stimulant, the heart is excited to more violent action; an increased secretion of bile promotes the vermicular motion, and a superfluity of mucus disposes to catarrh, &c. From these considerations it is evident, that there are causes sufficiently powerful to produce, at a very early period of life, an unalterable predisposition to a certain temperament. That a complete change is ever effected, from a choleric habit, for instance, to a phlegmatic, cannot be consistently admitted, at least while the laws of nature remain unalterable. I will, however, admit that the temperaments, though not completely changed, may be modified;—that the vehemence of some, and the languor of others, may to a certain degree be lessened; but this must be done by remedies suited to the class of the causes productive of a particular temperament. Of these the principal are:

"1. A different regimen. Thus animal food imparts the highest degree of strength to the organs, enlivens the senses, and often occasions a degree of ferocity; as is evident in cannibals, in carnivorous animals in general, in butchers and their dogs, in hunters, particularly when aided by the frequent use of spices, wines, and stimulating medicines. Vegetable diet, on the contrary, di-

miniſhes the irritability and ſenſibility of the ſyſtem; in a word, renders it phlegmatic.—Some authors indeed have conſidered potatoes as being the means of contributing to that end; but I am not inclined to ſubſcribe to this doctrine; ſince I have had occaſion to obſerve the lively temperament of the common people in Ireland.—Yet attention to this is highly neceſſary in thoſe, who have the charge of children; as by the uſe of animal food, additional energy may be given to the fibres, and when their irritability is too great, it may be diminiſhed by an oppoſite regimen.

" 2. Education, both phyſical and moral, is another cauſe of alteration in the temperament of man. Its power is almoſt unbounded, eſpecially in the more early periods of life; and hence it often happens, that whole nations ſeem to poſſeſs one common temperament.

" 3. Climate, in its moſt extenſive ſenſe, comprehending atmoſphere and ſoil, is a third cauſe of alteration. The activity and acuteneſs of a choleric habit are ſeldom to be found in a region of perpetual fog; as for inſtance, in Holland. They are the natural produce of a warm climate, and require a gentle elevation of ſurface, with a moderately moiſt ſoil, and a ſerene, equal atmoſphere.

" 4. I have often obſerved an aſtoniſhing degree of activity communicated to the whole ſyſtem, by an ardent deſire of learning; ſo that the

tempera-

temperament ſeemed to receive new life from every acceſſion of knowledge.

" 5. The want of the neceſſaries of life, on the one hand, or poſſeſſion of the means of luxury on the other, variouſly modify the diſpoſition;—and the livelineſs of the temperament is alſo obſerved to riſe or fall, according to the degree of political freedom.

" 6. Age, company, and profeſſional duties greatly affect the temperament. Hence we ſeldom find any one who, at 56 years of age, retains the activity of that choleric or ſanguine habit which he poſſeſſed at 36.

" Thoſe who follow nature, and not a plauſible hypotheſis, will be ſenſible how difficult it is to claſſify and fix the characteriſtic marks of the different temperaments; and it is rather a matter of doubt, whether the following rude ſketch will be more ſucceſsful than the attempts of others.

" All the modifications of temperaments appear to be varieties of the *ſanguine* and *phlegmatic*.

" 1. The ſanguine is variable. It is marked by a lively complexion; the veſſels are full of blood; and perſons of this habit are ſeldom able to bear great warmth; they are prediſpoſed to inflammations, and poſſeſs a high degree of irritability and ſenſibility. All is voluptuous in this temperament. They are fickle in every thing they undertake; are affable, and ſoon become acquainted, but as ſoon forget their friends, and are ſuſpicious of every

body. Whatever requires induſtry they abhor, and hence make little progreſs in ſcience, till they advance in age.

" 2. The ſanguineo-choleric enjoys all the health and ſerenity of the ſanguine, with all the perſeverance of the choleric.

" 3. In the choleric, the body is ſoft and flexible, without being dry and meagre as in the melancholic; the ſkin has a teint of yellow; the hair is red; the eyes dark and moderately large, with a penetrating expreſſion, and frequently a degree of wildneſs; the pulſe full and quick; the muſcular contractions in walking, ſpeaking, &c. are rapid; the bile is copious and acrid, and hence the vermicular motion is active, and the body not liable to coſtiveneſs. Perſons of this claſs are particularly fond of animal food. They poſſeſs great magnanimity, are fitted for laborious undertakings, and ſeem born to command.

" 4. He whoſe temperament is hypochondriacal, is a burthen to himſelf and others. Perſons of this claſs are ſubject to diſeaſes of the liver, and hence have a ſallow complexion. They are never content with their ſituation, and are a prey to envy and ſuſpicion.

" 5. The melancholic temperament is marked by a gloomy countenance, ſmall, hollow, blinking eyes, black hair, a rigid or tough ſkin, dry and meagre fibres. The pulſe is weak and languid, the bile black, the vermicular motion ſlow. The

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perceptions of perſons of this diſpoſition are quick; they are fond of contemplation, and are ſlow in the execution of labour, which they patiently undertake. They bear with reſolution the troubles of life; and, though not eaſily provoked, are nevertheleſs vindictive.

"6. The *Bœotic* or ruſtic temperament has many of the qualities of the ſanguine, in common with many of thoſe of the phlegmatic. The body is brawny, the muſcles have but little irritability, the nerves are dull, the manners rude, and the powers of apprehenſion weak.

"7. The gentle temperament is a combination of the ſanguine, choleric, and phlegmatic. Univerſal benevolence is the diſtinguiſhing character of this claſs. Their manners are ſoft and unruffled. They hate talkativeneſs; and if they apply to ſcience, their progreſs is great, as they are perſevering and contemplative. Laſtly,

"8. The phlegmatic claſs is marked by a ſoft, white ſkin, prominent eyes, a weak pulſe, and languid gait. They ſpeak ſlowly, are little hurt by the injuries of the weather, ſubmit to oppreſſion, and ſeem born to obey. From their little irritability, they are not eaſily provoked, and ſoon return to their natural ſtate of indifference and apathy."

On Patent or Quack Medicines.

ALTHOUGH there is but one ſtate of perfect health, yet the deviations from it, and the genera and ſpecies of diſeaſes, are almoſt infinite. It will hence, without difficulty, be underſtood, that in the claſſes of medical remedies there muſt likewiſe be a great variety, and that ſome of them are even of oppoſite tendencies. Such are both the warm and the cold bath, conſidered as medical remedies. Though oppoſite to each other in their ſenſible effects, each of them manifeſts its medical virtue, yet only in ſuch a ſtate of the body as will admit of uſing it with advantage.

It is evident from theſe premiſes, that an univerſal remedy, or one that poſſeſſes healing powers for the cure of *all* diſeaſes, is in fact a nonentity, the exiſtence of which is phyſically impoſſible, as the mere idea of it involves a direct contradiction. How, for inſtance, can it be conceived, that the ſame remedy ſhould be capable of reſtoring the tone of the fibres, when they are relaxed, and alſo have the power of relaxing them when they are too rigid; that it ſhould coagulate the fluids when in a ſtate of reſolution, and again attenuate them when they are too viſcid; that it ſhould moderate the nerves in a ſtate of preternatural ſenſibility,

and

and likewiſe reſtore to them their proper degree of irritability, when they are in a contrary ſtate.

Indeed, the belief in an univerſal remedy appears to loſe ground every day, even among the vulgar, and has been long exploded in thoſe claſſes of ſociety, which are not influenced by prejudice, or tinctured with fanaticiſm. It is, however, ſincerely to be regretted, that we are ſtill inundated with a flood of advertiſements in almoſt every newſpaper; that the lower and leſs enlightened claſſes of the community are ſtill impoſed upon by a ſet of privileged impoſtors, who frequently puzzle the intelligent reader to decide, whether the boldneſs or the induſtry with which they endeavour to eſtabliſh the reputation of their reſpective poiſons, be the moſt prominent feature in their character *.—It was juſtly

* To illuſtrate this propoſition farther, I ſhall quote the ſenſible remarks of a late writer, Mr. JAMES PARKINSON, who expreſſes himſelf, in his "*Medical Admonitions*," when treating on the ſubject of Catarrh, in the following pertinent words:

"Moſt of the Noſtrums advertiſed as *cough drops*, &c. are preparations of opium, ſimilar to the paregoric elixir of the ſhops, but diſguiſed and rendered more deleterious, by the addition of aromatic and heating gums. The injury which may be occaſioned by the indiſcriminate employment of ſuch medicines, in this diſeaſe, may be very conſiderable: as is well known by every perſon poſſeſſing even the ſmalleſt ſhare of medical knowledge.

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juſtly obſerved by the ſagacious and comprehenſive BACON, "that a reflecting phyſician is not directed by the opinion which the multitude entertain of a favourite remedy; but that he muſt be guided by a ſound judgment; and conſequently he is led to make very important diſtinctions between thoſe things, which only by their name paſs for medical remedies, and others which in reality poſſeſs healing powers."

"It would undoubtedly be rendering a great benefit to ſociety, if ſome medical man were to convince the ignorant of the pernicious conſequences of their reliance on advertiſed Noſtrums: but, unfortunately, the ſituation in which medical men ſtand is ſuch, that their beſt-intentioned and moſt diſintereſted exertions for this purpoſe would not only be but little regarded, but frequently would be even imputed to baſe and invidious motives. Thoſe to whom they have to addreſs their admonitions are unhappily thoſe on whom reaſon has leaſt influence. "Prithee, Doctor," ſaid an old acquaintance to a celebrated empiric, who was ſtanding at his door, "how is it that you, whoſe origin I ſo well know, ſhould have been able to obtain more patients than almoſt all the regular-bred phyſicians?—"Pray," ſays the Quack, "how many perſons may have paſſed us whilſt you put your queſtion?"—"About twenty."—"And, pray, how many of thoſe do you ſuppoſe poſſeſſed a competent ſhare of common ſenſe?"—"Perhaps one out of twenty."—"Juſt ſo," ſays the Doctor; "and that one applies to the regular phyſician, whilſt I and my brethren pick up the other nineteen."—p. 327 and 328.

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I am induced to avail myſelf of this quotation, as it indirectly cenſures the conduct of *certain* medical practitioners, who do not ſcruple to recommend what are vulgarly called Patent and other Quack medicines, *the compoſition of which is carefully concealed from the public.* Having acquired their ill-merited reputation by mere chance, and being ſupported by the moſt refined artifices, in order to delude the unwary, we are unable to come at the evidence of perhaps nine-tenths of thoſe who have experienced their fatal effects, and who are now no longer in a ſituation to complain.

The tranſition from *Panaceas*, or univerſal remedies, to *Noſtrums* or *Specifics*, ſuch, for inſtance, as pretend to cure the *ſame* diſeaſe in *every* patient, is eaſy and natural. With the latter alſo, impoſitions of a dangerous tendency are often practiſed. It will probably be aſked here, how far they are practically admiſſible, and in what caſes they are wholly unavailing. It is not very difficult to anſwer this queſtion. In thoſe diſeaſes, which in every inſtance depend upon the ſame cauſe, as in agues, the ſmall-pox, meaſles, and many other contagious diſtempers, the poſſibility of ſpecifics, in a limited ſenſe, may be rationally, though *hypothetically*, admitted. But in other maladies, the cauſes of which depend upon a variety of concurrent circumſtances, and the cure of which, in different individuals, frequently requires very

very oppoſite remedies, as in the Dropſy, the various ſpecies of Colic, the almoſt infinite variety of Conſumptions, &c. &c. a ſpecific remedy is an impudent burleſque upon the common ſenſe of mankind. Thoſe who are but imperfectly acquainted with the various cauſes from which the ſame diſorder originates in different individuals, can never entertain ſuch a vulgar and dangerous notion. They will eaſily perceive, how much depends upon aſcertaining with preciſion the ſeat and cauſe of the affection, before any medicine can be preſcribed with advantage or ſafety:—even life and death, I am concerned to ſay, are too often decided by the *firſt ſteps* of him, who offers or intrudes his advice upon a ſuffering friend.

The following inſtances will ſhew the danger attending the precipitate application of the ſame medicine in ſimilar diſorders.—A perſon violently troubled with the colic took a glaſs of juniper ſpirits, commonly called Hollands, from which he received almoſt inſtantaneous relief, as the affection proceeded from flatulency. Another perſon, who found himſelf attacked with ſimilar pains, was induced by the example of his friend to try the ſame expedient; he took it without heſitation, and died in a few hours after.—No wonder that the conſequences here were fatal, as the colic in the latter caſe was owing to an inflammation in the inteſtines.—A third perſon was afflicted with a colic, ariſing from poiſonous muſhrooms, which he

he had inadvertently ſwallowed; the immediate adminiſtration of an emetic, and after it, ſome diluted vegetable acid, reſtored him to health. A fourth perſon had an attack of this malady from an *encyſted hernia* or inward rupture. The emetic, which relieved the former patient, neceſſarily proved fatal to the latter; for it burſt the bag of incloſed matter, poured the contents within the cavities of the abdomen, and thus ſpeedily terminated his exiſtence. Again, another had by miſtake made uſe of arſenic, which occaſioned violent pains, not unlike thoſe of a common colic. A large quantity of ſweet oil taken internally was the means of his preſervation; whereas the remedies employed in the other caſes would have been totally ineffectual. Here I willingly cloſe a narrative, the recital of which cannot but excite the moſt painful ſenſations. To lengthen the illuſtration would lead me too far beyond my preſcribed limits: for caſes of this nature happen ſo frequently, that it would be eaſy to extend the account of them, by a long catalogue of intereſting but fatal accidents.

What is more natural than to place confidence in a remedy, which we have known to afford relief to others in the ſame kind of affection? The patient anxiouſly inquires after a perſon who has been afflicted with the ſame malady. He is eager to learn the remedy that has been uſed with ſucceſs. His friend or neighbour imparts to him the wiſhed-

for

for intelligence. He is determined to give it a fair trial, and takes it with confidence. From what has been ſtated, it will not be difficult to conceive, that if his caſe does not exactly correſpond with that of his friend, any *chance remedy* may be extremely dangerous, and even fatal.

The phyſician is obliged to employ all his ſagacity, ſupported by his own experience, as well as by that of his predeceſſors; and, nevertheleſs, is often under the temporary neceſſity of diſcovering from the progreſs of the diſeaſe, what he could not derive from the minuteſt reſearches. How then can it be expected, that a novice in the art of healing ſhould be more ſucceſsful, when the whole of his method of cure is either the impulſe of the moment, or the effect of his own credulity? It may be therefore truly ſaid, that life and death are frequently entruſted to chance *.

From

* The late Dr. Huxham, a phyſician of great celebrity, in ſpeaking of *Aſclepiades*, the Roman empiric, ſays: "This man from a *declaimer* turned *phyſician*, and ſet himſelf up to oppoſe all the phyſicians of his time; and the novelty of the thing bore him out, as it frequently doth the *Quacks* of the preſent time; and ever will, *whilſt the majority of the world are fools.*"

In another place, Dr. Huxham thus curiouſly contraſts the too timid practice of ſome regular phyſicians, with the hazardous treatment, which is the leading feature of Quacks: "The timid, low, inſipid practice of ſome, is almoſt as dangerous as the bold unwarranted empiriciſm of others;

From what has been premiſed, it may be confidently aſſerted, that a noſtrum or an univerſal remedy is as great a *deſideratum* as the philoſopher's ſtone. The abſurd idea of an univerſal medicine can only obtain credit with the weak, the credulous, or the ignorant.

One of the moſt unfortunate circumſtances in the hiſtory of ſuch medicines, is the inſinuating and dangerous method, by which they are *puffed* into notice. And as we hear little of the baneful effects which they daily muſt produce, by being promiſcuouſly applied, people attend only to the extraordinary inſtances, perhaps not one in fifty, where they have afforded a temporary or apparent relief. It is well known, that the more powerful a remedy is, the more permanent and dangerous muſt be its effects on the conſtitution; eſpecially if it be introduced like many Patent-Medicines, by an almoſt indefinite increaſe of the doſes.

There is another conſideration, not apt to ſtrike thoſe who are unacquainted with the laws of animal œconomy.—When we intend to bring about any remarkable change in the ſyſtem of an organized body, we are obliged to employ ſuch means as may contribute to produce that change, without affecting too violently the *living powers*; or without

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others; time and opportunity, never to be regained, are often loſt by the former; whilſt the latter, by a *bold puſh*, ſends you off the *ſtage* in a moment."

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extending their action to an improper length. Indeed, the patient may be gradually habituated to almoſt any ſtimulus, but at the expence of palſied organs, and a broken conſtitution *. Such are the melancholy effects of impoſture and credulity! Were it poſſible to collect all the caſes of ſacrifices to this myſterious infatuation, it is probable that their number would exceed the enormous havoc made by gunpowder or the ſword.

A popular writer, Dr. BUCHAN, makes the following juſt remark on the ſubject in queſtion: "As matters ſtand at preſent," ſays he, "it is eaſier to cheat a man out of his life, than of a ſhilling, and almoſt impoſſible either to detect or puniſh the offender. Notwithſtanding this, people ſtill ſhut their eyes, and take every thing upon truſt, that is adminiſtered by any pretender to Medicine, without daring to aſk him a reaſon for any part of his conduct. Implicit faith, every where elſe the object of ridicule, is ſtill ſacred here."

* An Italian Count, uncommonly fond of ſwallowing medicines, found at length that he could take no more. Previous to his death, he ordered the following inſcription to be placed on his tomb:

"*I was once healthy; I wiſhed to be better; I took medicine,*
"*and died.*"

Analyſis

Analyſis of Faſhionable Complaints.

If theſe abuſes of medicine be of conſequence, how much more ſo are certain manners, habits, and cuſtoms, which the united efforts of the Faculty will never effectually remove or ſuppreſs, unleſs aſſiſted by the female guardians of helpleſs infancy. That I may not be miſunderſtood with reſpect to the real intention of this addreſs to the fair ſex, I beg leave previouſly to obſerve, that the following remarks apply chiefly to certain claſſes of the community, among whom a due degree of attention is but rarely paid to the ſkin of their offſpring.

The greater number of our faſhionable complaints and affections are nearly related to each other. The gout, formerly a regular but rare diſeaſe, which attacked only the external parts of perſons advanced in years, has now become a conſtitutional indiſpoſition, a juvenile complaint, torturing the patient in a thouſand different forms. The famous *Podagra* and *Chiragra* of our anceſtors are now nearly obſolete, and inſtead of the gout in the *feet* or *hands*, we hear every day of the nervous gout, the gout in the *head*, and even the fatal gout in the *ſtomach*. No rank, no age, no mode of life ſeems to be exempt from this faſhionable enemy.—The next and ſtill more general malady of the times, is *an extreme ſenſibility to*

every change of the atmoſphere; or rather, a conſtantly ſenſible relation to its influence. We are not only more ſubject to be affected with every current of air, every change of heat and cold, but the feelings of ſome are ſo exquiſitely delicate, that in a cloſe apartment, nay in bed, they can determine with accuracy the ſtate of the weather, as well as the direction of the wind. By conſulting their bodily ſenſations, theſe *living barometers* announce more correctly than the artificial ones, not only the preſent, but even the future changes of the weather. I could never have believed, that this additional ſenſe, which is only of modern origin, could be ſo much improved, had I not frequently witneſſed the ſenſations of certain patients, when a cloud is floating over their heads;—a talent ſo peculiar to our age, that it would undoubtedly excite ſurpriſe, but no envy, in our leſs refined forefathers. In a climate, where the weather changes every day, and almoſt every hour, it may be eaſily imagined, how dependent, frail, and tranſitory, muſt be the health of the wretched poſſeſſors of this *new* ſenſe; and that beings ſo organized cannot warrant, for a ſingle hour, their ſtate of health, their good-humour, or their phyſical exiſtence. Is it not then very probable, that many ſtrange and inconſiſtent events of our days may have their ſecret foundation in this dependence on the weather?—In judging of man and his actions, we ought firſt to obſerve the ſtate of the barometer;—as our more

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ſuperſtitious anceſtors made the celeſtial conſtellations the criterion in their prognoſtics.

Not leſs characteriſtic of the preſent generation, but more painful, are the faſhionable nervous and hypochondriacal diſeaſes. Theſe are formidable, inſidious tormentors, which not only deſtroy our phyſical well-being, but alſo envenom our tranquillity and contentment, and cloud our faireſt proſpects of happineſs. Without depriving us of life, they render it an inſupportable burthen; without inducing death, they make him a welcome viſitor.

It is unneceſſary to detail the diverſified ſhapes, in which theſe maladies preſent themſelves. Let it ſuffice to obſerve, that however intimately the mind appears to be connected with theſe phenomena, we can nevertheleſs account for them from phyſical cauſes. They have rapidly increaſed with the propagation of the gout, and experience ſhews, that they frequently alternate with it, in the ſame individual patient. It is highly probable, therefore, that they are of a ſimilar nature with the gout; and that they originate from the ſame ſource, which is peculiar to our age. Cloſely connected with the gout, and likewiſe with the hypochondriaſis, how frequently do we obſerve the hæmorrhoids, formerly a diſeaſe of the aged, now the companion of youth, and almoſt a general complaint.

The laſt claſs of our faſhionable diſeaſes includes all thoſe affections of the ſkin, which are known by the name of *eruptions*, *diſcolorations*, *efflo-reſcences*, *ſcorbutic taints*, &c. Of late, theſe have alarmingly increaſed, and appear daily to ſpread every where, like noxious weeds. Even in the higher ranks, where neither a poor diet, nor want of attention to cleanlineſs, can be aſſigned as cauſes, we frequently obſerve perſons, whoſe ſkin announces bad health, and on whom medicine can have no effect. Phyſicians of different countries complain of new and unheard-of cutaneous diſorders, of an extremely malignant tendency; and if the ſpreading of them be not checked in time, Europe will perhaps once more be viſited with that malignant and filthy diſeaſe, the Leproſy.

It is however not ſufficient to give a bare catalogue of theſe ſingular affections. I ſhall, therefore, attempt to trace them to their ſource; to ſhew that they can be eaſily prevented; and to point out the moſt likely means by which ſo deſirable an event may be accompliſhed.—It is to you, guardians of future, and I hope hardier races, that I now appeal—it is your aid I ſolicit in ſo important a meaſure of national and domeſtic policy.

On the Nature and Functions of the Skin.

MUCH as we hear and ſpeak of *bathing*, and of the great attention at preſent paid to cleanlineſs, I am bold to affirm, that the greater number, if not the whole of our faſhionable complaints, originate from the want of care and proper management of the *ſkin*. Through unpardonable neglect in the earlier part of life, eſpecially at the age of adoleſcence, the ſurface of the body is ſo unnaturally enervated by conſtant relaxation, that it oppreſſes, and, as it were, confines our mental and bodily faculties; promotes the general diſpoſition towards the complaints above alluded to; and, if not counteracted in time, muſt produce conſequences ſtill more alarming and deplorable.

We often hear people complain, that *their ſkin is uneaſy*; a complaint, which I fear is but too prevalent among thoſe, who give themſelves little trouble to inquire into its origin.—But how is it poſſible, I hear many perſons aſk, that the ſkin, which is a mere covering of the body, to ſhelter it from rain and ſun-ſhine, can have ſuch influence over the whole frame? I ſhall venture to explain this problem, and hope to impreſs ſuch as are inclined to be ſceptical, with more reſpect for that part of the human body,

The ſkin unites in itſelf three very eſſential functions. It is the organ of the moſt extenſive and

uſeful ſenſe, that of *touch*; it is the channel of *perſpiration*, the principal means which Nature employs to purify our fluids; and through the moſt admirable organization, is enabled to *abſorb* certain ſalutary parts of the ſurrounding atmoſphere, and to guard us againſt the influence of others of an injurious tendency. For this purpoſe, innumerable nerves and veſſels are diſperſed throughout the ſkin, which are in the continual act of feeling, and at the ſame time of ſecreting and volatilizing noxious particles, and abſorbing thoſe containing vital principles. It has been proved by accurate calculations, that the moſt healthy individual daily and inſenſibly perſpires upwards of three pounds weight of ſuperfluous and hurtful humours. It may therefore be confidently aſſerted, that no part of the body is provided with ſo many and important organs, by which it is connected with almoſt every operation performed in animal life, as the ſkin. It is this, which places us in the moſt immediate connection with the ſurrounding atmoſphere, which through that channel particularly affects us, and exerts its influence on our health:—we further feel, directly through the ſkin, the qualities of the air, heat, cold, preſſure, rarefaction, &c.; and hence we experience, at leaſt in their influence, other much more ſubtle and leſs known qualities, of which I ſhall only mention the electric and magnetic fluids. From the ſpiritual and highly penetrating nature of theſe fluids, we may

may eaſily conjecture, how conſiderable a ſhare they muſt have in the principle of vitality, and of what important uſe the organ is, through which they affect us.

Important as the ſkin is to external life, it is no leſs ſo to the internal œconomy of the body, where it appears to be peculiarly deſigned to preſerve the great equilibrium of the different ſyſtems, by which the human frame is ſupported in its vital, animal, and ſexual functions.—If any ſtagnation, accumulation, or irregularity ariſe in the fluids, the ſkin is the great and ever-ready conductor, through which the ſuperfluous particles are ſeparated, the noxious volatilized, and the fluids, ſtagnating in their courſe, ſet at liberty; a canal being at the ſame time opened for the removal of thoſe humours which, if they ſhould get acceſs to the vital parts, ſuch as the heart and the brain, would cauſe inevitable deſtruction. By the proper exerciſe of this organ, many diſeaſes may be ſuppreſſed in their early ſtages; and thoſe which have already taken place may be moſt effectually removed. No diſeaſe whatever can be removed without the co-operation of the ſkin. The nature and conſtitution of this organ moſt certainly determine either our hope or apprehenſion for the ſafety of the patient. In the moſt dangerous inflammatory fevers, when the proſpect of recovery is very faint, a beneficial change of the ſkin is the only effort, by which Nature, almoſt overcome, relieves herſelf, and ejects

the poiſon in a ſurpriſing manner, frequently in the courſe of one night. The greateſt art of a phyſician, indeed, conſiſts in the proper management of this extenſive organ, and in regulating its activity, where occaſion requires. To mention only one circumſtance; it is well known to thoſe who have experienced the beneficial effects of a ſimple bliſter, that its ſtimulus, like a charm, has frequently relieved the moſt excruciating pains and ſpaſms in the internal parts.

Cleanlineſs, *flexibility*, and *activity* of the ſkin are, according to the obſervations premiſed, the principal requiſites to the health of individuals, as well as of whole nations. But inſtead of contributing to its improvement, we generally pay very little attention to it, except to the ſkin of the face and hands, which are too often made the *fallacious* index of health. I am convinced, however, that moſt of the patients and valetudinarians, who take ſo much pains to refreſh and fortify the *internal* parts of their body, by invigorating potations, rarely, if ever, pay any regard to their *external* ſurface;—an object of equal importance, and perhaps ſtanding in much greater need of corroborants than the former. Hence it happens, that the ſkin of convaleſcents is obſerved to be particularly relaxed and obſtructed; that they are liable to continual colds, upon the leaſt change of temperature; and that every day of their recovery renders them more ſubject to relapſes.

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In this country, the children of people in the middling and lower ranks are perhaps better managed, than in moſt of the countries upon the Continent; becauſe frequent and daily bathing is, to my certain knowledge, no where ſo generally practiſed as in England. As ſoon, however, as children attain a certain age, this practice is again as generally neglected: after the tenth or twelfth year of age, the ſurface of the body is very little attended to. Thus a foundation is laid for numberleſs evils, and particularly for that ſcorbutic taint in the human ſyſtem, which now almoſt univerſally prevails, and which is more or leſs connected with other and more faſhionable complaints. —As we advance further in years, this diſpoſition of the ſkin increaſes ſtill more, particularly from the mode of life purſued in the higher ranks. We then begin to accuſtom ourſelves to ſedentary habits, to think, and to partake of the pleaſures of life. The lady, the man of fortune, and the ill-fated man of letters, all of them require *more active* exerciſe, than they actually take, which alone can promote a free perſpiration, and enliven the ſurface of the body; but, by their indolent habits, the whole machine ſtagnates, and the ſkin becomes contracted and debilitated.

The huſbandman, indeed, labours diligently; and though, by the ſweat of his brow, his ſkin preſerves more life and activity, it is neither kept ſufficiently clean, nor prevented from being obſtructed

ſtructed by perſpirable matter. The artiſt and manufacturer carry on their purſuits in a ſedentary manner, and in a confined, impure air; the latter, in the duties of his occupation, generally employs unwholeſome articles, ſo that at length he loſes the uſe of this organ entirely, in ſome parts of the body. The voluptuary and the glutton do not ſuffer leſs than the former, as they impair the energy of the ſkin by exceſſes of every kind, and take no precautions to preſerve its elaſtic texture.—Our uſual articles of dreſs, flannel excepted, are not calculated to promote a free perſpiration;—our coal-fires, and ſtill more the large potations of *warm* liquors, contribute greatly to relax the ſkin. If we add to this liſt of prediſpoſing cauſes, our inconſtant climate, which at one hour of the day braces, and at another relaxes the ſurface of the body, which alternately heats and cools it, and conſequently diſturbs its uniform action; it will be eaſily underſtood, that the ſkin muſt for theſe reaſons be almoſt generally vitiated, and that it really is a leading ſource of many of our faſhionable indiſpoſitions.

When the ſenſation of the ſurface is impaired, when the myriads of orifices, that are deſigned for the continual purification and renovation of our fluids, are obſtructed, if not cloſed;—when the ſubtle nervous texture is nearly deprived of its energy, ſo that it becomes an *impenetrable coat of mail*, is there any reaſon to wonder, that we are

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ſo often haraſſed by a ſenſe of conſtraint and anxiety, and that this uneaſineſs, in many caſes, terminates in a deſponding gloom, and at length in complete melancholy?—Aſk the hypochondriac, whether a certain degree of cold, paleneſs, and a ſpaſmodic ſenſation in the ſkin, do not always precede his moſt violent fits of mental debility; and whether his feelings are not moſt comfortable, when the ſurface of his body is vigorous, warm, and perſpires freely? In ſhort, the degrees of inſenſible perſpiration are to him the ſafeſt barometer of his ſtate of mind. If our ſkin be diſorganized, the free inlets and outlets of the electric, magnetic, and other matters, which affect us at the change of the weather, are inactive. Thus the origin of extreme ſenſibility towards the various atmoſpheric revolutions, is no longer a myſtery. For, in a healthy ſurface of the body, no inconvenience will follow from ſuch changes.—If we further advert to thoſe acrimonious fluids which, in an imperfect ſtate of perſpiration, are retained in our body, and which ſettle upon the moſt ſenſible nerves and membranes,—we ſhall better apprehend, how cramps or ſpaſms, the torturing pains of the Gout and Rheumatiſm, and the great variety of cutaneous diſeaſes, have of late become ſo obſtinate and general.

The equilibrium of the fluids, and the circulation of the blood, are alſo determined in no ſmall degree by the ſkin; ſo that if theſe fluids become thick

thick and languid, the whole momentum of the blood is repelled towards the interior parts. Thus a continual plethora, or fulneſs of the blood, is occaſioned; the head and breaſt are greatly oppreſſed; and the external parts, eſpecially the lower extremities, feel chilly and lifeleſs.

In warm climates, in Italy for inſtance, the hæmorrhoids, a very diſtreſſing complaint, are but rarely met with, notwithſtanding the luxurious and ſenſual mode of life of the inhabitants; becauſe perſpiration is always free and unchecked: while among us perſons are found, who devote the whole of their attention to the cure of that troubleſome diſorder.

May we not infer, from what I have thus advanced, that the uſe of baths is too much neglected, and ought to be univerſally introduced? It is not ſufficient, for the great purpoſes here alluded to, that a few of the more wealthy families repair every ſeaſon to watering-places, or that they even make uſe of other modes of bathing, either for their health or amuſement. A very different method muſt be purſued, if we ſeriouſly wiſh to reſtore the vigour of a degenerated race. I mean here to inculcate the indiſpenſable neceſſity for *domeſtic baths*, ſo well known among the ancients, and ſo univerſally eſtabliſhed all over Europe, a few centuries ago, and which were eminently calculated to check the further progreſs of the leproſy;—a diſeaſe which, though ſlower in its

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effects, is not less distressing than the plague itself.

Much has been said and written upon the various methods, and the universal medicines, proposed in different ages, by different adventurers, professedly to diminish the inherent disposition to disease, and to give a new and renovating principle to the human frame. At one time they expected to find it in the philosophic and *astralian salts*, at another in Magnetism and Electricity;—some fanatics pretended to have discovered it in the light of the moon, others in celestial beds;—but, if I may venture to deliver my opinion, we may search for it most safely and conveniently in every clear fountain—in the bosom of ever young, ever animating nature.

Bathing may be also considered as an excellent specific for alleviating both mental and bodily sufferings. It is not merely a cleanser of the skin, enlivening and rendering it more fit for performing its offices; but it also refreshes the mind, and spreads over the whole system a sensation of ease, activity, and pleasantness. It further removes stagnation in the larger as well as in the capillary vessels; it gives an uniform free circulation to the blood, and preserves that wonderful harmony in our interior organs, on the disposition of which our health and comfort so much depend. A person fatigued, or distressed in body and mind, will derive more refreshment from the luxury of a lukewarm bath,

and

and may drown his diſquietude in it more effectually, than by indulging in copious libations to Bacchus. The bath may be equally recommended as an admirable retiring place, to evade, for a time, the influence of the atmoſphere; and perſons that have the misfortune to be too ſuſceptible of external impreſſions, would find no ſmall benefit, were they to repair in thick and ſultry weather to the bath, where they breathe in an element leſs loaded with noxious particles.

The wiſh to enjoy perpetual youth, is one of the moſt predominant and pardonable. Though it cannot be rationally aſſerted, that bathing will confer continual youth, yet I will hazard an opinion, that it has a very uncommon and ſuperior tendency to prolong that happy ſtate; it preſerves all the ſolid parts ſoft and pliable, and renders the joints of the body flexible. Hence it powerfully counteracts, what I preſume to call an inſidious diſeaſe, viz. *age*, which operates by gradually exhauſting the humours, and depriving the conſtituent parts of the human frame of their elaſticity. It is no leſs certain, that bathing is one of the moſt efficacious means of preſerving beauty; and that thoſe nations, among which bathing is a prevailing practice, are uſually the moſt diſtinguiſhed for elegance of form and beauty of complexion.

A moderate deſire to improve and beautify the ſurface of the body, is far from being a frivolous purſuit. It excites as much intereſt, and is productive

ductive of as beneficial conſequences, as the exertions of many a pſeudo-philoſopher, who devotes the toil of years, to arrange his notions in a certain ſyſtematic form, and who yet is not fortunate enough to attain the great object of his wiſh. I have had frequent opportunities to obſerve, that the deſire of beauty, when not inordinate, may prove the ſource of many virtuous and laudable purſuits, and that it may be greatly inſtrumental to the preſervation of health. I am alſo perſuaded, that this deſire is often purſued by methods not the moſt proper, and that from not having a juſt knowledge of beauty, we make many valuable ſacrifices, not only of things relating to health, but ſometimes of life itſelf. Inſtances are not uncommon, of young perſons attempting to bleach their ſkins, and beautify their perſons, by avoiding a free air, uſing a mild and weakening diet, long faſting, long ſleeping, warming their beds, &c. &c. but, alas! the event does not anſwer their expectation,—they loſe both health and bloom!—Eating chalk, drinking vinegar, wearing camphorated charms, and ſimilar deſtructive means have been reſorted to, by other more daring adventurers, but with no better ſucceſs. Thoſe I have laſt enumerated, may be called the *minor coſmetics*: others of a more formidable nature, I almoſt heſitate to mention, as they are unqueſtionably the moſt deleterious ſubſtances we are acquainted

with. *Mercury* and *lead*, manufactured in various forms, are unhappily too common ingredients in many of our *modern* coſmetics, whether they conſiſt of lotions, creams, powders, paints, or ointments. That theſe ſubſtances can be communicated to the circulating fluids, through the ſkin as well as by the ſtomach, requires, I ſhould ſuppoſe, no further proof, after the doctrines already advanced on this ſubject. *Lead*, in particular, if once introduced into the ſyſtem, though in the ſmalleſt proportions, cannot be removed by art, and never fails to produce the moſt deplorable effects; ſuch as palſy, contraction and convulſion of the limbs, total lameneſs, weakneſs, and the moſt excruciating colic pains. Beſides theſe more obvious effects, the frequent external uſe of lead and mercury, as coſmetics, occaſions cramps in every part of the body, faintings, nervous weakneſs, catarrhs, tubercles in the lungs and inteſtines, which occur together or ſeparately, according to the different circumſtances, till at length a conſumption, either pulmonary or hectic, cloſes the dreadful ſcene.

Beauty of the ſkin, the ſubject under conſideration at preſent, is but another term for a ſound and healthy ſkin;—a pure mirror of the harmony of the internal parts with their ſurface, or, if I may be allowed the expreſſion, "*it is viſible health.*"

There ſubſiſts ſo intimate a relation between our interior and exterior veſſels, that almoſt every error or irregularity in the organs within, ſhows itſelf firſt of all on the ſurface without, and particularly on the face.—How often are we ſtruck at the countenance of a perſon, who thinks himſelf in perfect health, but whoſe illneſs, the reſult of ſome morbid cauſe concealed in the body, juſtifies in a few days the ſerious apprehenſions we entertained at our laſt interview. Nature has wiſely ordained, that the firſt appearance of internal irregularities is indicated by the countenance; but to what uſe do we generally apply this index?—We refuſe to avail ourſelves of her beneficent intimation; and the continued uſe of pernicious ſubſtances, inſtead of promoting the object we have in view, ultimately tarniſhes and impairs that beauty, which we meant to adorn and preſerve. We imagine it in our power to improve the ſkin, without attending to the purity of the fluids, although it is indebted to them for its very exiſtence; and yet ſhould ſmile at a perſon, who attempted to cleanſe an impure tongue, by conſtantly ſcraping it, when a diſordered ſtomach was the real cauſe of that impurity.

From the tenor of the preceding poſitions, I hope for indulgence, when I venture to pronounce every coſmetic, whoſe compoſition is kept a ſecret from the public, falſe and fraudulent ware. The three great and really effectual SUBSTITUTES FOR

Cosmetics *, which I would recommend, are the following: *First*; due attention to *inſenſible perſpiration*;—an important proceſs, by which nature, if duly aſſiſted, will not fail to expel all acrimonious or uſeleſs particles. By this, too, the ſurface of the body will be kept in a conſtant atmoſphere of ſoftening exhalations,—a ſpecies of volatile vapor-bath, and the moſt efficacious means of preſerving it ſoft and pliant, and of animating it with the colour of life. The next circumſtance to be attended to, is the *purity of the fluids*; this de-

* To ſuch readers, whether male or female, as are *determined* to make uſe of *coſmetics*, inſtead of attending to the more effectual means to preſerve the bloom of the ſkin, it may be of ſervice to point out one or two *external applications*, in order to prevent them from reſorting to the dangerous and deſtructive contrivances of Quacks.—According to Dr. Withering, a phyſician of great eminence at Birmingham, an infuſion of horſe-radiſh in milk makes one of the ſafeſt and beſt coſmetics. Another preparation for clearing the ſkin of pimples and *recent eruptions*, if aſſiſted by gentle aperient medicines, is the freſh expreſſed juice of houſe-leek, mixed with an equal quantity of ſweet milk or cream.—Yet all contrivances whatever, to anſwer this purpoſe, are abſurd and nugatory, if the *inward* ſtate of the body be neglected, or if they be looked upon as *ſpecifics of themſelves*. Such things do *not* exiſt in nature; and we might as well try to bleach the face of a Negro, as to remove any ſcorbutic or other eruptions from the face, without beſtowing proper attention on the whole ſtate of the body, and particularly the fluids, from which theſe irregularities derive their origin.

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pends equally on a free *perſpiration*, and on a vigorous ſtate of *digeſtion*. The third requiſite to a fair, healthful complexion, is an *uniform* diſtribution of the fluids; or in other words, *a free and unreſtrained circulation of the blood*; as the very pureſt fluids, when profuſely propelled to the face, are productive of diſagreeable conſequences, ſuch as unnatural redneſs, fluſhings, tumid appearances, &c., of which ladies of a ſedentary life are ſo apt to complain.

To theſe three general obſervations, I think, it may be neceſſary to ſubjoin a few particular injunctions, relative to the improvement of the ſkin, as connected with a ſtate of good health.—Carefully avoid all *immoderate*, and *violent dancing*, as the ſudden alternations of heat and cold, not only impair the general ſtate of the ſkin, but are likewiſe of the greateſt detriment to beauty.—Abſtain from the too frequent and too copious uſe of heating liquors of every kind, particularly punch and ſtrong wines. There is ſcarcely any thing which is, in my opinion, more deſtructive of the bloom of youth and manhood, than this *liquid fire*, which fills the blood with inflammable particles, propels them towards the face, parches the ſkin, renders it ſpotted, and lays the foundation of that incurable diſeaſe, which is ſometimes figuratively called *copper in the face*. Neither ſugar, nor any additional ingredient to gratify the palate, can deprive theſe liquors of their noxious qualities, ſo that

even the moſt agreeable of theſe ſeductive potions is attended with conſiderable danger.

Avoid, likewiſe, every exceſs in *hot* drinks, as coffee, chocolate, and tea, particularly the laſt, in which the people of this country are given to indulge, more than in any other beverage. I ſcarcely dare venture to impeach this favourite *ſolace* of our morning and evening hours; but with all due deference to the comforts of the domeſtic circle, I conſider it as my duty to denounce the too liberal uſe of this liquor, as not a little prejudicial to the fairneſs and purity of the ſkin. Tea taken hot, and in immoderate quantities, not only has a tendency to weaken the organs of digeſtion, but cauſes fluctuations and congeſtions in the humours of the face, and frequently brings on a degree of debilitating perſpiration. Let us conceive the ſtomach inundated with a portion of warm water, juſt at the time of digeſtion; its concoctive powers are literally drowned, at the very inſtant when their aſſiſtance is moſt required; and, inſtead of a pure balſamic *chyle*, or alimentary fluid, it prepares crude, and acrimonious humours, which can only generate an unhealthy maſs of blood. Here, I cannot impreſs upon the attentive reader, in terms ſufficiently ſtrong, the following truth: *that a healthy ſtomach only can produce healthy and uncontaminated fluids*; and that two thirds of what we call acrimony, or ſharpneſs of humours in the ſyſtem, proceed from a languid

ſtomach,

ſtomach, and irregular digeſtion.—If therefore the tea be made too weak, it will operate merely as warm water, and like it will greatly relax the coat and membranes of the ſtomach;—if made too ſtrong, it will give an unnatural heat to the body, prove a dangerous ſtimulus to the nerves, occaſion palpitations of the heart, univerſal trembling, cramps, and a number of other complaints, which it is needleſs to enumerate. That theſe effects do not take place, during the firſt months or years of indulging ourſelves in the intemperate uſe of hot and ſtrong tea, is no argument to controvert this poſition; they will, either ſooner or later, unavoidably follow.

I ſhall but ſlightly touch here, on another ſubject, ſcarcely of leſs importance than the former; namely, the various articles prepared by the paſtry-cook and confectioner. Theſe dainties would be leſs objectionable, if any method could be deviſed of baking them without the pernicious ingredients of yeaſt and fat, ſubſtances which load the ſtomach with a glutinous ſlime and rancid matter, which obſtruct the glands of the abdomen, particularly thoſe of the meſentery, and which have a ſtrong tendency to produce the cutaneous diſeaſes before mentioned.

On the Phyſical Education of Children.

The phyſical education * of infants unqueſtionably forms an object of the firſt importance. The great diſproportion ſubſiſting between healthy and diſeaſed children, together with the deplorable mortality which occurs among the latter, too plainly evince, that their *bodily* welfare is not ſufficiently attended to.

There is little room to doubt, that by a more rational mode of nurture, during the firſt years of infancy, many ſubſequent diſeaſes might either be wholly prevented, or at leaſt greatly mitigated. Nothing perhaps would contribute more to meliorate education in general, than, what has been long and much wanted, a ſerious and minute attention of the Faculty to this particular branch of medical ſtudy; which at preſent, I am concerned to ſay, is almoſt totally neglected.

The few books extant on this ſubject are neither written on ſcientific principles, nor calculated, by their manner and ſtyle, to afford plain and popular inſtruction. It is not enough for profeſſional men, to plan ſyſtems of education in their ſtudy-rooms;—let them alſo demonſtrate in prac-

* To ſome readers it may be neceſſary to explain, that by *phyſical education* is meant the bodily treatment of children: the term *phyſical* being applied in oppoſition to *moral*.

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tice, that they are familiarly acquainted with the *true* method of educating children;—a method which, in my opinion, implies ſomewhat more than merely preſcribing and adminiſtering medicines.

So long as the nurſing of children remains excluſively in the hands of common midwives and nurſes, it is rather a matter of ſurpriſe, that ſo many infants ſhould ſurvive the age of childhood.—We ought therefore, above all things, to inquire into the monſtrous prejudices prevailing in this eſſential part of domeſtic management, as the firſt ſtep towards their extirpation.

How great would be my ſatisfaction, if, by the following ſtrictures, I ſhould be able to prevail upon ſome intelligent mothers, who poſſeſs ſufficient fortitude, to throw off the bondage of old cuſtoms, or modern faſhions, and to return to the path of ſimple nature!—In a ſyſtem of practical education, it is a judicious precept, which cannot be too much inculcated, *to omit rather than to undertake, or be too officious, in the phyſical treatment of infants.*

From the difficulty of diſcovering the true cauſe and ſeat of the complaints of children, eſpecially if accompanied with any particular ſymptoms in the excretory veſſels, it is very uſual to adminiſter a *gentle laxative* or *emetic*, upon the ſlighteſt occaſion.—It would lead me too far to examine, in detail, the many bad conſequences reſulting from ſo abſurd and detrimental a practice. I cannot, however, forbear from remarking, that by dealing

conſtantly in aperient medicines (a ſtrange infatuation among the vulgar!) the future diſeaſes of the child aſſume a particular character of the *gaſtric* kind—the juice of the ſtomach, which ſerves to concoct our food, being vitiated. As the operation of the laxatives is in a manner mechanical, by impelling the fluids, and particularly thoſe of the mucous kind, towards the ſtomach and bowels, and cauſing them to accumulate in a greater degree than uſual, it will be eaſily underſtood, that by the frequent repetition of this ſtimulus, the gaſtric juice will be rendered unfit to effect the proper ſolution of food in the ſtomach. For the ſame reaſon, perſons ſubject to frequent coſtiveneſs ſoon begin to complain of indigeſtion, when they once habituate themſelves to take ANDERSON'S, or any other aperient pills: for by them the ſtomach is converted, as it were, into a field of battle, where all the irregularities, that take place in the ſyſtem, are left to fight their way; where the limits of diſeaſe and health, nay the alternative of life and death, are to be finally determined. That this however is not the moſt proper place for ſuch a conteſt, requires no demonſtration. The ſtomach is appointed by nature for very different purpoſes; it is the only organ of nouriſhment and digeſtion; the ſource of reſtoration and health. But how can it effectually anſwer this end, if it ſerves, at the ſame time, as the conſtant laboratory of diſeaſes? As it is always in a ſtate of impurity, it cannot act with

with uniform energy and a ſufficient degree of elaſticity, to prevent frequent irregularities in digeſtion;—hence ariſe bad humours, hypochondriac affections, and nervous debility; all of which, I have reaſon to fear, are, more or leſs, conſequences of tampering with medicines, eſpecially in the period of childhood. I am further induced to think, though it may to ſome appear rather a bold idea, that more children are deſtroyed by the abſurd practice of loading their tender ſtomachs with every ſort of traſh, and afterwards relieving them by repeated doſes of phyſic, than by any *natural* proceſs. This likewiſe accounts for the great number of children who die *in towns*, at an early age, before they become inured to ſuch ſevere attacks made on their digeſtive organs.

In order to check, and, if poſſible, to prevent, this general tendency to diſeaſes; to meliorate the conſtitution of children, by producing a regular circulation of the fluids; and to direct the exuding morbid matter more univerſally and uniformly through the pores of the ſkin, a more effectual remedy cannot be ſuggeſted, than that of *frequent bathing*, and a very limited uſe of aperient medicines.

Theſe obſervations are not conjectural, but founded on experience, and it gives me pleaſure to add, that they are confirmed by many phyſicians of eminent abilities, and extenſive practice.

Frequent

Frequent bathing in infancy is a powerful mean of counteracting and ſuppreſſing the diſpoſition to ſtomachic and bilious complaints, which, in our days, are uncommonly prevalent among children and adults, and which are frequently accompanied with diverſified nervous ſymptoms. By the efforts of nature, to throw off malignant humours by the ſurface of the body, in conſequence of a proper uſe of the bath, many infantile diſeaſes may be ſafely prevented, catarrhs ſuppreſſed, or greatly mitigated, teething rendered eaſy, and the whole phyſical condition of the child conſiderably improved.

It becomes here a queſtion, which is the moſt proper degree of heat in uſing the bath for children.—I ſhall venture to pronounce, upon the authority of the beſt modern authors, confirmed by my own experience and obſervation, that the *lukewarm bath*, between 84 and 96° of Fahrenheit's thermometer, rather more than new-milk warm, is, upon an average, the moſt ſuitable temperature. An erroneous notion too much prevails, that the good effects of bathing are principally to be aſcribed to the *cold bath*. The uſe of any bath, indeed, whether cold or warm, that is, the ſtimulating impreſſion excited by the water, is, of itſelf, an excellent tonic, ſerving to brace and invigorate the whole ſyſtem. Not to mention the comfortable ſenſations, that muſt neceſſarily attend the cleanſing and opening ſo many millions of pores,

with which the ſkin is provided, it is farther remarkable, that water, formerly conſidered as a *ſimple* element, is now pretty generally underſtood to be a *compound* body, conſiſting of *oxygen* and *hydrogen*, or vital and inflammable air, the former of which, it is well known, promotes the proceſs of *reſpiration*, and literally feeds the vital principle in the human body. Although this aſſertion reſts chiefly on an hypothetical foundation, ſo much is certain, that a lukewarm bath, uſed for the legs alone, is found by experience to communicate new ſpirits to the weary traveller, almoſt inſtantly to remove the ſenſe of languor, and to re-animate all his faculties. *Bruce*, the Abyſſinian traveller, remarks, that in the intenſe heat of that country, a lukewarm bath afforded him more refreſhment and vigour, than a cold one. We ought farther to conſider, that infants are accuſtomed ſcarcely to any other than a *warm* temperature. The cold bath belongs to the claſs of *heroic remedies*, and in its ſudden and vehement effects nearly reſembles electricity. It is moreover an axiom in medicine, that the means of ſtimulating and corroborating the ſyſtem, ſhould be in proportion to the degree of vital power in the individual; that a faint ſpark may be extinguiſhed rather than kindled by too violent a concuſſion of air; and that a degree of ſtimulus and invigoration, which agrees with a firm and robuſt body, may prove deſtructive to one that is weak and tender. It might therefore

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be extremely hazardous to employ a remedy, in the delicate frame of infants, which even adults ſhould not reſort to without the greateſt precaution. I preſume to go a ſtep farther, and do not heſitate to ſay, that the uſe of the cold bath, as far as relates to the treatment of children, is even DANGEROUS. Its principal mode of operation is by contracting the whole ſurface of the body, and by cauſing a general repulſion of the fluids towards the internal parts. Hence in a young and infirm body, which has very little internal *reaction*, the neceſſary conſequence of cold bathing will be an unequal diſtribution of the fluids, a partial or local ſtagnation of them; and, what is worſt of all, an accumulation of humours in the head, by which infants are frequently injured, before it is in their power to complain.—The lukewarm bath, on the contrary, produces an uniform revolution and ſalutary purification of all the fluids. For theſe reaſons, I conſider the tepid bath as in every reſpect preferable, ſince it may be uſed ſomewhat cooler for ſtrong children, or warmer for thoſe of a weakly conſtitution, and the requiſite degrees of heat be regulated according to the increaſing age and ſtrength of the child. In ſummer, the water intended for bathing ought to be expoſed the whole day to the rays of the ſun, which will impart to it an agreeable and congenial warmth. Rain, or river-water, is the moſt proper for this purpoſe; but if there be a neceſſity for uſing ſpring or well-

water,

water, it ſhould be previouſly ſoftened with a ſmall quantity of boiled water, in which a quarter of an ounce of ſoap has been diſſolved, with the addition of a little bran or oatmeal; or if milk can be had, it will be found a ſtill more uſeful ingredient. Here I would particularly recommend not to boil the *whole* quantity of the water to be uſed for bathing; as it would in that caſe be deprived of its aërial conſtituents, which are not without their importance in the bath.—During the firſt weeks and months, the child ſhould not be ſuffered to remain in the bath longer than five minutes, which time may be gradually increaſed to a quarter of an hour. During the whole proceſs of bathing, the body ſhould not remain inactive, but be gently rubbed with the hand, and afterwards cleaned with a ſoft ſpunge. It is of conſequence to attend to the point of time, when the child is taken out of the bath; for in almoſt every inſtance where warm bathing diſagrees with the child, it will be found owing to neglect in not wiping and drying the body with ſufficient expedition at this particular period. Hence it is highly neceſſary to keep warm cloths in readineſs, in which the child ſhould be wrapped up, and dried, the very moment it is taken out of the bath. Every one in the habit of bathing muſt have obſerved, that the evaporation of water on the ſkin excites penetrating and uncomfortable ſenſations of cold; and there is an aſtoniſhing difference of temperature between

actually being in the water, and having water on the ſkin after quitting the bath. If, therefore, a child, from want of due precaution, be kept for ſeveral minutes with a naked, wet body, it will be liable to contract a cold, the more dangerous in its conſequences, as it immediately ſucceeds a ſtate, in which the body is warm and the ſkin open.

It ſhould be further obſerved, that bathing, immediately after a meal, or with a full ſtomach, is highly improper, if not dangerous, both in children and adults; nor is it adviſable, in rough weather, to carry a child into the open air too ſoon after bathing. The moſt proper time for uſing the bath is the evening, when the child can be removed to bed, as ſoon as it is completely dried.

There is another ſpecies of bath, equally indiſpenſable, which I will call the *Air-bath*; or the daily enjoyment of freſh air. This is uſually conſidered as a promenade, or walk of pleaſure; and as children cannot judge of its great utility, and the weather is not always favourable for excurſions, parents are ſometimes guilty of unpardonable neglect, in confining infants for whole days and weeks together within their rooms. But if air be eſſentially requiſite to animate the moſt ſubtle powers of man, it follows, that it is as neceſſary to the organs of life as food and drink; and that its ſalutary influence on the conſtitution does not ſo much depend on the ſtate of it with reſpect to pleaſant-

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neſs and ſerenity, as on its freſhneſs and conſtant renewal. Hence I would impreſs it on the reader, as a rule not to be departed from, *to let no day elapſe, without affording the child an opportunity of imbibing the ſalubrious qualities of freſh air.*—In the firſt months great precaution is neceſſary, and children born in ſpring or ſummer have in this reſpect no ſmall advantages, as there is leſs danger in expoſing them to the open air during the warm months, than there is in autumn and winter. In the milder ſeaſons, too, violent winds, and moiſt weather, cannot be too carefully avoided. After the two firſt months of its exiſtence, if the child has been duly habituated to freſh air, it may be ſafely carried out in *any* ſtate of the weather: this ought to be regularly done every day, if it be only for half an hour, as it is one of the moſt nouriſhing cordials that can be given. I ſhall juſt notice here, in a curſory way, the great benefit which the eyes of children derive from this practice, and which, particularly at a time when complaints of weak and ſore eyes are heard in almoſt every family, is of the utmoſt importance. It is an unqueſtionable fact, that the ſhortneſs of ſight, and weakneſs of the eyes, ſo prevalent among the inhabitants of towns, is chiefly owing to the injudicious cuſtom of confining children, during the firſt years of their lives, almoſt conſtantly within four walls; ſo that the eye, being accuſtomed to *near* objects only, becomes organized for a narrow view, and

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at length is rendered incapable of forming the focus properly for *diſtant* objects. On the other hand, it is equally certain, that by an early and daily exertion of the organs of ſight, in beholding remote objects, in the open air, the circle of viſion is enlarged, the power of ſight increaſed, and a ſolid foundation laid for acquiring a clear and comprehenſive diſcernment of objects.

From the preceding obſervations, it will be readily admitted, that the proper and daily airing of the nurſery, *in winter as well as in ſummer*, is of no ſmall importance to the well-being of children.—It has been proved by many fatal inſtances, that a confined and impure air is of itſelf capable of exciting the moſt violent convulſive ſymptoms, and conſequently is one of the principal cauſes, that ſo many infants die of convulſions, during the firſt months of their lives. Would it not be more eligible, to ſelect the moſt airy apartment in the houſe for a nurſery, than low and confined garrets, as is too frequently the caſe in large families? The room, in which children breathe, ſhould at leaſt be capacious and lofty, and expoſed to the cheering rays of the ſun, which not only influence the temper and ſpirits of children, but ſerve to purify the corrupted air in their apartments.

Perſons unaccuſtomed to reflect on this ſubject, can ſcarcely conceive, what ſalutary effects the ſimple means here recommended, namely, the early habit of waſhing, bathing, and daily airing, pro-

duce

duce on the conſtitution, and phyſical formation of the child. The habit of body, growth, and appearance of children, properly educated in this reſpect, will be totally different from thoſe, who are reared like foreign plants in a hot-houſe. To point out ſtill more forcibly the peculiar advantages attending the regimen here recommended, I ſhall exhibit a picture of ſuch children, not taken from fancy, but authorized by facts, and according with the experience of many modern obſervers, as well as my own, and that of a reſpectable phyſician in Germany, Profeſſor HUFELAND of Jena, to whom I am greatly indebted for the following obſervations:

1. A child thus treated is more hardy and leſs affected by the viciſſitudes of climate and weather.

2. Its body is ſtraight and robuſt; its limbs are uniformly muſcular, and well-proportioned.

3. The ſtages of evolution, in its different organs, take place in regular ſucceſſion;—no power, no capacity, outſtrips another; its teeth do not appear too ſoon, nor at irregular periods; the child does not begin to walk too early nor too late; and the ſame order is obſervable with regard to its ſpeaking. Even the mental faculties expand themſelves more regularly, that is, not too rapidly, but after the moſt important bodily changes have been effected. Every period of its progreſs to maturity comes on in a natural and gradual manner, ſo that the child, in a phyſical ſenſe, longer remains a

child;—he does not ſhoot up into manhood, before he has completed the proper term of youth; and thus every ſtage, as well as the whole career of his exiſtence, is conſiderably prolonged.

4. By this treatment the circulation of the fluids, and all internal motions, particularly of the lungs and inteſtines, together with the uſual evacuations, are beneficially promoted. Of no leſs advantage is the bath to thoſe children, that are ſubject to habitual coſtiveneſs; a diſtemperature which cannot be too much guarded againſt, not only during the age of childhood, but alſo through the whole life. Infants accuſtomed to the bath, and freſh air, are ſcarcely ever known to ſuffer from this complaint.

5. The texture of their muſcular fleſh becomes ſolid, the colour blooming, and the body neither appears tumid and ſpungy, nor parched and meagre. The complexion is lively and freſh;—the head and lower belly are in juſt proportion to the reſt of the body, and the diſpoſition to rickets, ſo common in children, is not perceived in them.

6. Neither are ſuch children as enjoy the benefit of the bath affected by that exceſſive ſenſibility and diſeaſed irritability of the nervous ſyſtem, which in many inſtances ſo fatally degenerates into ſpaſms, fits, and convulſions. Theſe irregularities, in early life, are chiefly inſtrumental in bringing on that pitiable ſtate, in which ſome unhappy perſons, through the whole of their lives, are little better than *loco-motive nervous machines*—organized beings,

ings, that exiſt apparently for the ſake of *feeling only, not for acting.*

7. Diſeaſes of the ſkin, eruptions, catarrhs, coughs, obſtructions of the firſt paſſages, &c. are rarely obſerved to attack a child properly treated; and if they do, their duration will be ſhort, and the *criſes* eaſy and natural.

8. Thoſe diſeaſes in children, which are commonly called dangerous, as the ſmall-pox, meaſles, ſcarlet fever, &c. and which are ultimately diſeaſes of the ſkin, are greatly alleviated in their ſymptoms, and more eaſily overcome, when the ſkin is in full health and vigour;—but as the uſual management of children deprives the ſkin of thoſe properties, we need not be at all ſurpriſed at the danger and ſubſequent mortality of children, in the above-mentioned diſeaſes.

9. The early practice of waſhing and bathing may be alſo recommended, as tending to ſtrengthen that ſenſe of cleanlineſs, which is ſo praiſeworthy and uſeful in itſelf; and which is not ſufficiently cultivated among thoſe nations, where the bath is in diſuſe*.

If

* The Ruſſians, notwithſtanding their ignorance, and ruſticity of manners, take the lead of the more refined French and Germans, both in a delicate ſenſibility of cleanlineſs, and in the practical uſe of the bath. I lately read of a foreign gentleman, travelling in Ruſſia, who had hired one of the natives as his groom or poſtillion. After having

If the means above ſtated are expected to produce their full effect, it ſhould not be forgotten, that the *whole* management of the child ought to correſpond and keep pace with the preceding practice. Without attending to this condition, conſtant waſhing and bathing may not only prove of little ſervice, but may in ſome inſtances be productive of miſchief. Hence it is abſolutely neceſſary to prohibit the uſe of feather-beds, cumberſome dreſſes, &c. and to avoid all ſuffocating rooms, whether occaſioned by too great heat, or an offenſive corrupted atmoſphere.

There is no practice more detrimental to the powers and energy of man, in the firſt period of his evolution, than that of immediately ſinking the tender infant in a ſoft feather-bed. In this ſituation, all the organs become extremely relaxed, and we lay the foundation of a very ſerious malady, a *ſweating ſkin*; the ſource of conſtant colds, tooth-achs, head-achs, catarrhs, and innumerable other complaints.

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travelled ſeveral days together in very ſultry weather, the ſemi-barbarian upon his knees requeſted his employer to grant him leave of abſence for two or three hours, to refreſh himſelf with the luxury of a bath, which to him was indiſpenſable, and the want of which he had long felt. The *peaſants* in that country poſſeſs a refinement of ſenſe, with reſpect to the ſurface of the body, with which the moſt elegant *ladies* in other countries ſeem totally unacquainted.

For

For theſe and ſimilar reaſons, I would adviſe parents to lay their children, from the very hour of their birth, on ſoft and cooling mattreſſes, under thin blanket covers, or cotton quilts, which do not incommode the body, leave the hands and arms at liberty, and are not liable to excite too great a degree of heat. In the intenſe cold of winter, an additional blanket may be uſed, which, however, ſhould be removed when the weather turns milder, and the child grows ſtronger. But the greateſt miſchief ariſes from bolſters or pillows filled with feathers; which muſt, after a certain time, produce uncleanlineſs and a diſagreeable ſmell. Such a pillow is calculated to collect and retain mephitic vapours; and for this obvious reaſon it cannot but be unſafe to ſleep for a whole twelvemonth with one's head repoſed on ſuch a maſs of acrid exhalations. This inconvenience may be eaſily avoided, by furniſhing children with cuſhions filled with horſe-hair, or with the ſofteſt bran, previouſly well beaten; the beſt for this purpoſe is the bran of oats. The great advantage of theſe pillows is, that they admit moiſture to paſs through them, conſequently they will always remain dry; and may from time to time be renewed, while they preſerve a moderate and regular degree of warmth.

Cleanlineſs, in domeſtic life, is one of the cardinal virtues, and an eſſential requiſite to the proper phyſical education of children. Indeed, I cannot help remarking, that this is perhaps the *only* province

of parental care, in which we *never* can do *too much*. For this end, we ought not to neglect the article of linen, as the frequent change of it is of more conſequence than many parents are aware of. A child is much more liable to perſpire than an adult; the natural effect of which is, that its linen is more readily ſoiled and rendered unfit for wearing. I would therefore adviſe all parents, who can afford it, to give their children clean, dry linen *every day*. An undoubted proof of the utility of this practice is, that inſtances have occurred of children being cured of the rickets, when, from the firſt appearance of that complaint, they have been daily furniſhed with clean linen, well dried, and occaſionally ſmoked with juniper-berries, frankincenſe, or other perfuming ſubſtances, in order to expel the moiſture, which is abſorbed by linen. But if a clean change cannot be conveniently had every day, the night-ſhirt, as well as that of the day, ought to be regularly dried, and perfumed if neceſſary.

Laſtly, let the dreſs of children be light; the head and breaſt during the firſt months may be covered, though very ſlightly; but as ſoon as the hair is ſufficiently ſtrong to afford protection, there is ſcarcely any neceſſity for hats or caps, unleſs in rainy or cold ſeaſons. The breaſt and neck too acquire more firmneſs, and are rendered hardier, by keeping them uncovered; as our frequent colds and ſore throats chiefly originate from

the abſurd habit of wearing boſom-friends and ſtiffened cravats.

I ſhall conclude theſe obſervations with an hiſtorical account from HERODOTUS, which clearly illuſtrates the advantage attending the cool regimen of the head. This judicious and learned writer informs us, that after the battle fought between the *Perſians*, under CAMBYSES, and the *Egyptians*, the ſlain of both nations were ſeparated: and upon examining the heads of the Perſians, their ſkulls were found to be ſo thin and tender, that a ſmall ſtone would immediately perforate them: while, on the other hand, the heads of the Egyptians were ſo firm, that they could ſcarcely be fractured by the largeſt ſtones. The cauſe of this remarkable difference Herodotus aſcribes to a cuſtom the Egyptians had of ſhaving their heads from the earlieſt infancy, and going uncovered in all ſtates of the weather; whereas the Perſians always kept their heads warm, by wearing heavy turbans.

I ſincerely wiſh, that the rules and obſervations, here ſubmitted to the candid reader, were more generally underſtood and practiſed, ſo far at leaſt as they are found to accord with reaſon and experience. I am not however diſpoſed to imagine, that plans of *ſudden* improvement are the moſt likely to ſucceed; and I am well aware of the difficulties we muſt expect to encounter, when we attack old and rooted prejudices, with the hope of vanquiſhing them *all at once*. For though I ſhould

be fortunate enough to ſubſtitute ſounder opinions and better practices, in lieu of thoſe already eſtabliſhed, yet, unleſs the mind be prepared for ſuch changes, by a proper philoſophic culture; nothing is more probable, than that a ſpeedy relapſe into former errors will be the neceſſary conſequence. The hiſtory of our own time has, in ſome recent inſtances, evidently confirmed the truth of this obſervation. We find even the mandates of arbitrary power inſufficient to produce a thorough reform in the manners and cuſtoms of a ſuperſtitious people. The philanthropic but weak emperor JOSEPH II. was obliged to yield to the torrent of popular prejudice; and, in ſpite of his better reaſon, frequently to repeal meaſures dictated by the enlightened genius of philoſophy. His obſtinate and infatuated ſubjects were not fully ripe for ſuch ſalutary innovations. Our age is ſcarcely docile enough to purſue thoſe improvements, which a rapid and continual progreſs in the ſciences is daily ſuggeſting. Upon this ground alone we can explain the frequent and obvious contraſt between the prevailing theories and practices, both in the higher and lower walks of life. A great majority of the common people, from their habitual indifference to literature, and their averſion to ſerious reflection, ſtill manifeſt their ancient prejudices to every thing which falls under the deſcription of novelty or improvement. More than one generation will probably elapſe, before even a part of the uſeful hints

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can be realiſed, which lie diſperſed in the later writings on ſubjects of health and domeſtic œconomy.—Whatever benefits can be attained by popular inſtruction, both with regard to the treatment of children and adults, muſt be introduced in a gradual manner. The ancient treatment of children, being conſecrated by time, muſt not be rudely and precipitately rejected; but old cuſtoms may be changed by prudent and moderate management; and thus we may proceed from one ſtep to another, in extending the boundaries of truth and reaſon. A gradual tranſition from a faulty to a better ſtate of things, is commonly the moſt permanent. Let us combat, at firſt, the moſt dangerous notions and prejudices: the conqueſt over a *ſingle* prejudice, if it be completely extirpated, is a triumph of no little moment; inaſmuch as it will ſhake the foundation of many others, more or leſs connected with it.

In my earneſt endeavours to caution the reader againſt inveterate prejudices, I do not mean to inſinuate, that a perfect and permanent ſtate of health is compatible with the delicate organization and complex functions of the human body: I am well aware, that its moſt healthy condition cloſely borders on diſeaſe, and that the ſeeds of diſtempers are already planted in the very fulneſs or luxuriance of our fluids.—Hence no *abſolute* perfection is to be found among mortals, whether we conſider them in a phyſical or moral ſtate. CICERO illuſtrates

illuſtrates this poſition, when ſpeaking of man as a moral agent, with equal truth and energy, in the following words: "He is not," ſays this philoſophical orator, "the moſt virtuous man, who "commits *no* faults; but I conſider him as the "moſt virtuous, whoſe conſcience reproaches "him with the *feweſt*."

CHAP. I.

A Practical Inquiry into the means and plans adopted among different nations, with a view to prolong human life.—An hiſtorical ſurvey of this intereſting ſubject, in different ages; together with the ſucceſs which has attended the reſpective efforts made by nations and individuals.—A brief ſtatement of the conditions requiſite to the attainment of a long and healthy life.—Obſervations, rules, and cautions deduced from the experience of ages.—Symptoms of actual diſſolution.—Summary account of a dietetic ſyſtem; explanation of its deſign, and the vaſt diverſity of objects comprehended under this popular ſcience.

As the enjoyment of 'a ſound mind in a ſound body' is one of the greateſt of terreſtrial bleſſings, it is incumbent on every rational inquirer, to devote ſome portion of his time and induſtry to the reſearch of ſuch uſeful and practical objects, as may contribute to improve and inſure ſo deſirable a ſtate.

As long as the various functions of the human body, the voluntary as well as the involuntary motions, are performed with eaſe, and ſuffer no interruption, we uſually pronounce the body to be

be in a ſtate of health; in the contrary caſe we call it diſeaſed. I ſhall advance a ſtep further, and aſſert, that when we do not feel ourſelves encumbered with the weight of our own frame, and when we are not diſpoſed to reflect, with uneaſineſs and ſolicitude, upon its phyſical condition, then we have a right to conſider our health as being in a perfect ſtate.

Although we are liable to ſuffer from the attacks of diſeaſe, in a variety of ſhapes, yet we have abundant reaſon to contemplate with ſatisfaction the chequered condition of human life: for, even in the preſent imperfect ſtate of things, we find comforts more than ſufficient to counterbalance our ſorrows. Conſidering the innumerable accidents, to which we are daily and hourly expoſed, it is a matter of juſt ſurpriſe, that frail, imbecile man ſhould remain in health during the greater part of his life; and ſtill more ſo, that, upon an average, the number of healthy individuals ſhould be found far to exceed thoſe in a contrary ſtate. If we further advert to the want of thought and circumſpection, which marks the conduct of man in general, in the treatment of his body, our aſtoniſhment will neceſſarily increaſe, that he ſo often eſcapes the dangers prepared by his own hands. But parental Nature frequently repairs the injury, though we are not conſcious of her ſalutary efforts. She powerfully co-operates, when art is called in aid, to reſtore that harmony and

order in the ſyſtem, which had been imprudently or inadvertently diſturbed. To her healing powers we are principally indebted, if the ſufferings reſulting from ignorance or obſtinacy are leſs ſevere, than the extent of the miſchief ſeemed to portend.

It cannot be expected, that perſons unacquainted with the œconomy of the human frame ſhould be able to diſcriminate between internal and external cauſes, and their effects. Where a competent ſhare of this knowledge is wanting, it will be impoſſible to aſcertain, or to counteract, the different cauſes by which our health is affected; and ſhould a fortunate individual ever fix upon a ſuitable remedy, he will be indebted to chance alone for the diſcovery.

This has been the caſe in all ages, and alas! it is ſtill deplorably the caſe. Remedies have from time to time been deviſed, not merely to ſerve as *Noſtrums for all diſeaſes*, but alſo for the pretended purpoſe of *prolonging human life*. Thoſe of the latter kind have been applied with a view to refiſt or check many operations of nature, which inſenſibly conſume the vital heat, and other powers of life, ſuch as reſpiration, muſcular irritability, &c. Thus, from the implicit credulity of ſome, and the exuberant imagination of others, obſervations and experiments, however diſcordant with ſound reaſon and philoſophy, were multiplied, with the avowed deſign of eſtabliſhing proofs or refutations

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of this or that abſurd opinion. In this manner have fanaticiſm and impoſture falſified the plaineſt truths, or forged the moſt unfounded and ridiculous claims; ſo that one glaring inconſiſtency was employed to combat another, and folly ſucceeded folly, till a fund of materials has been tranſmitted to poſterity, ſufficient to form a conciſe hiſtory of this ſubject.

Men, in all ages, have ſet a juſt value on long life; and in proportion to the means of enjoying the ſame, this value has been felt in a greater or leſs degree. If the gratification of the ſenſual appetite formed the principal object of living, the prolongation of it would be, to the epicure, as deſirable, as the proſpect of a life to be enjoyed beyond the limits of the grave, is to the moraliſt and the believer.

In the Old Teſtament, the promiſe of a long life was held up as one of the moſt important ſources of conſolation: and, conformably to the principles of Chriſtianity, a patient continuance in well-doing, or, in other words, a long life rich in good works, can beſt inſure the hope of a more happy ſtate in a future world. Hence the wiſh of a ſpeedy termination of our exiſtence here, is one of thoſe eccentricities, into which only perſons deprived of reaſon are liable to be drawn, either from extreme anxiety, or the want of mental fortitude. The deſire of longevity ſeems to be inherent in all animal life, and particularly in human nature: it is intimately

intimately cheriſhed by us, throughout the whole of our exiſtence, and is frequently ſupported and ſtrengthened, not only by juſtifiable means, but alſo by various ſpecies of colluſion.

The poſſibility of prolonging human life was never doubted by the Orientals, even in the earlieſt ages. One of the moſt ancient methods on record, is that of placing the aged and decrepit in the vicinity of an atmoſphere, replete with the exhalations of blooming youth. It is not improbable, that a certain cuſtom then prevailing in the Eaſt, by alluring the fancy with beautiful images, and by impoſing upon the underſtanding through poetical fictions, firſt induced man to entertain this ſingular notion. The bloom of a juvenile age, and particularly the healthful virgin, was compared, by the Orientals, with roſes, lilies, and other elegant flowers; ſhe was introduced in allegorical deſcription, to repreſent odoriferous ſpices, balms, and oils, and was made the ſubject of paſtoral and other poems. How eaſy, then, the tranſition from fancy to belief, that the exhalations of vigorous and healthy perſons muſt be highly conducive to the ſupport of exhauſted age; that they were capable, like the fragrant balms of the Eaſt, of ſoftening the rigidity of the fibres, of exciting the vital ſpirits, and, in ſhort, of ſupplying the aged with a freſh ſtock of health. The hiſtory of King David furniſhes us with a ſtriking illuſtration of this renovating proceſs.

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In the writings of the ancient phyſicians, we meet with various accounts, from which we learn, that this method has ever been a favourite reſource of invalids, worn out with age. Modern phyſicians alſo mention the practice, and the celebrated BOERHAAVE informs us, that he adviſed an old and decrepit burgomaſter at Amſterdam to ſleep between two young perſons; and that his patient, who before was ſinking under the weight of infirmities, obviouſly recovered ſtrength and cheerfulneſs of mind.

The great age of ſome ſchoolmaſters has likewiſe been aſcribed to the benefit they derive from breathing, almoſt conſtantly, among young and healthy children. It has been farther obſerved, that young perſons, if they ſleep in company with the aged, become lean and enfeebled.—Upon more accurate inquiries, however, it is pretty evident, that moſt of the benefits (perhaps all of them) which the aged derive from this expedient, may be placed to the account of the imagination, and its ſurpriſing effects on the body. It is this power which, in my opinion, renews the languiſhing flame of the aged, and which may preſerve them for ſome time longer in that renovated ſtate, provided it be ſupported by a proper attention to diet and other circumſtances.—We frequently ſee a debilitated and peeviſh old man aſſume a complacent ſmiling aſpect, when a ſprightly maiden addreſſes him in the language of courteous pleaſantry.

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The moſt charming images recur to his ſtimulated imagination; and the powers of life are, as it were, again rouſed, and directed to one object. That ſuch means of re-animating old age, may have a favourable effect on health, cannot be diſputed.

To imagine, however, that the vigour of health, and the bloom of youth can be transfuſed by inſenſible perſpiration, or exhalation, into the body of the aged, is to labour under a very palpable miſtake. I ſhall prove, in the next Chapter "On Air and Weather," that every living being neceſſarily corrupts the air more or leſs by its reſpiration; and that the atmoſphere, thus impregnated, becomes unfit for other beings to breathe in; becauſe every expiration contains certain particles, which are ſeparated by the lungs, as being uſeleſs and noxious to the body. How then is it conceivable, that matters or ſubſtances ſhould be hurtful to one body, if retained in it, and uſeful to another, if communicated to it? Or was it ſuppoſed, that the *watery parts* of inſenſible exhalation from the young body, could moiſten and refreſh the parched fibres of the aged? To accompliſh this purpoſe, we are poſſeſſed of remedies, much purer and more effectual. Natural warmth or heat is the only means competent to produce ſuch a ſalutary effect; as that alone is capable of exciting the ſlumbering energy of life. And in this reſpect, I apprehend, we ought to do

juſtice to the above-deſcribed method practiſed by the ancients.

When young perſons live or ſleep with old people, and are obſerved to grow thin and infirm, (which however is not always the caſe) that proceeds from another circumſtance, namely, that the former abſorb or inhale the noxious particles of the latter; but from this it by no means follows, that the aged body attracts the vital principle from the younger. Although free *caloric*, or matter of heat, may probably paſs over from the young body into that of the aged; yet this transfuſion, under certain circumſtances, would be rather to the advantage than diſadvantage of the former; inaſmuch as this deprivation of ſuperfluous caloric is not unfrequently found to be ſerviceable and wholeſome.

From the preceding remarks we may conceive, that a ſchool-room filled with the various exhalations of children, cannot conduce to the prolongation of life; and, conſequently, that the great age of certain ſchoolmaſters muſt be aſcribed to ſome other cauſe. An accurate account of the mortality prevailing among that claſs of men would ſatisfactorily demonſtrate, that the age of ſchoolmaſters is in a juſt proportion to that of other claſſes of ſociety.

I ſhall now conſider ſeveral other plans, that have been adopted for the prolongation of human life.

The

The Egyptians, who lived in a country rendered unwholeſome by intenſe heat and frequent inundations, could not long remain ignorant of the comparative longevity of their northern neighbours, the Greeks. After many fruitleſs attempts to diſcover the true cauſe of their ſhort life, and to provide the means of removing that cauſe, they at length became fanatical enough to imagine themſelves poſſeſſed of the grand ſecret for prolonging life—in the conſtant uſe of ſudorifics and emetics. The air of Egypt, being impregnated with aqueous and putrid particles, not only checked the proceſs of perſpiration, but alſo generated various epidemic diſtempers. In ſuch caſes, ſudorific medicines were neceſſary and proper; and even emetics, by exciting a forcible commotion through the whole ſyſtem, not unfrequently reſtored the activity of the cutaneous veſſels, and thus produced a favourable effect in thoſe maladies. Farther, the heat of the climate inſpiſſated their fluids; this circumſtance connected with their uſual mode of life, and their crude articles of food, neceſſarily brought on an exceſs of bile, which overflowing the ſtomach upon the leaſt occaſion, could not fail, ſooner or later, to occaſion very obſtinate diſeaſes. The emetics, therefore, being eminently qualified to evacuate the bile, would of courſe obtain general reputation among the Egyptians. Theſe and the ſudorifics were for a long time conſidered as ſpecific remedies; from their tendency to expel

the matter ſo dangerous to life; and becauſe in thoſe ages diſeaſes were conſidered the *only* enemies to longevity: the Egyptian phyſicians and philoſophers not being able to diſtinguiſh between effects and their cauſes, the latter of which exiſted in the peſtilential vapours of a hot climate.

Thus it became a cuſtom to take at leaſt two emetics every month; to inquire of acquaintances and friends, how thoſe medicines had operated, and to wiſh each other joy upon theſe occaſions. I need not obſerve, that this ſingular method of prolonging life is not to be recommended as worthy of imitation; that the periodical cuſtom of taking medicinal remedies renders their frequent repetition neceſſary, while it deſtroys their occaſional efficacy; and that it therefore chiefly belongs to the department of the phyſician to determine, when, and in what degree, ſuch medicines are to be adminiſtered.

The Greeks lived in a more romantic and picturesque country; their conceptions with regard to the ſtructure and functions of the human frame were more correct and conformable to nature. Their philoſophers and phyſicians were more enlightened and leſs prejudiced than thoſe of Egypt; they were not, like the latter, under the capricious influence of a wild imagination, too frequently diſordered by the effects of BLACK BILE. Nature, diſplayed in all her charms, in the ſublime and beautiful ſcenery of their country, every where invited

invited them to the enjoyment of free and pure air; the effects of this on their ſuſceptible nerves, combined with an excellent ſyſtem of bodily exerciſe, proved the beſt ſpecific for counteracting the effects of time, and thus prolonging their active, healthful lives. For this great and beneficial purpoſe, particular methods and rules were contrived, in order to give the body the moſt varied and effectual, yet gentle motions;—theſe athletic exerciſes were judiciouſly adapted to the different conſtitutions, ſituations, and ages of life, ſo that the ſagacious Greeks arrived at an extraordinary degree of perfection in the *gymnaſtic art*.

The great advantage of ſuch a courſe of bodily exerciſe cannot be diſputed, when we conſider how many individuals in all countries die prematurely from want of activity, motion, and nervous energy; though their organization may be in no reſpect faulty. Beſides, a body inured to frequent and laborious exerciſe, will not be eaſily affected by external cauſes of diſeaſe; being ſecured, as it were, by a coat of mail, againſt the attacks of many acute diſorders.

The Greeks carried, to a ſtill greater degree, the ſyſtem of gymnaſtic motions. By the ſame method they attempted to cure diſeaſes in their firſt ſtages, not excepting ſuch as were already formed, and to put a ſtop to their further progreſs. They cauſed the patient to move in various poſitions; they applied gentle friction to the whole ſurface of the

body; and uſed different methods to overcome the languor of the muſcles, by exciting and ſtimulating the muſcular energy.

In relaxed, weakly individuals, whoſe organization is deficient in the proper degree of tenſion or elaſticity, this method muſt be allowed to poſſeſs great advantages;—but I do not conceive it neceſſary to prove here, that it cannot be conſiſtently applied to *all* diſeaſes. It is not to be ſuppoſed, that the weary traveller can be either ſtrengthened or refreſhed by additional exerciſe.

The modern methods of bracing the human body, ſuch as frequent bathing in cold water, expoſing the body to all the viciſſitudes of climate and weather, the various modes of ſupporting bodily fatigue, as travelling on horſeback and on foot, &c. which are ſo indiſcriminately recommended to our aſpiring youth, cannot in every inſtance fortify and render the human frame indeſtructible:—on the contrary, *all ſuch violent efforts* have a tendency to bring on the ſymptoms of age, at a much earlier period than it ought to appear; as the joints and muſcles are thereby rendered liable to contract an uncommon degree of ſtiffneſs and rigidity.—To load tender youth with burthens diſproportionate to their age, and to impoſe upon them the taſk of men, can never be the moſt proper means of hardening and preparing them for a long and active life.

A diſ-

A diſtinction, however, ſhould be made here, between bracing the *fibres*, of which all ſolid parts of the body conſiſt, and bracing the ſenſe of *touch* or *feeling*. The animal fibres may be ſolid, but ſhould not be ſo rigid as to become inſenſible; a certain degree of irritability is neceſſary to the proper exerciſe of their contracting and relaxing power. If, further, there ſhould exiſt in the body a diſpoſition towards rigidity and inſenſibility, any artificial modes of bracing it will be of dangerous tendency. If, on the contrary, the fibres ſhould be too irritable, the Grecian method may, in that caſe, be reſorted to with ſafety and advantage. A ſtriking inſtance of this occurs in the hiſtory of Captain Cook. On his arrival in the Friendly Iſlands, he was ſeized with an acute rheumatiſm, attended with excruciating pains. He was ſoon relieved from this torturing ſituation, by the eaſy and inſtinctive proceſs of gentle friction, which the Iſlanders generally followed on ſuch occaſions. Thus a few untutored perſons completely effected what could not have been ſooner, nor more eaſily accompliſhed by the ſyſtematic art of the learned.

From theſe conſiderations we may ſafely infer, 1. That the cold bath, gymnaſtic exerciſes, bodily fatigue of any kind, and all expedients to brace and invigorate the conſtitution, ought only to be adopted under certain limitations, viz. with a pro-

per regard to particular caſes and circumſtances; and, 2. That theſe ſevere remedies cannot and ought not to be univerſally nor indiſcriminately recommended, as methods of prolonging life.

Let us not, however, diſparage the merits of that ingenious race of men, whom we only know from their inimitable works. For, although the method of the Greeks cannot be ſafely introduced among us, without many and great exceptions, we muſt do them the juſtice to allow, that in their operations of hardening the human body, they proceeded in a more cautious, gradual, and judicious manner, than the moderns ſeem willing to ſubmit to. Sudden changes of any kind produce a ſort of revolution in the body, and this is neceſſarily attended with a waſte of ſtrength, proportionate to the violence of the ſhock.

Plutarch poſſeſſed clear and rational ideas on the ſubject of preſerving and prolonging human life; the truth of which he confirmed by his own experience, during a ſeries of many happy years. He adviſes to keep the head cool and the feet warm, not immediately to take medicines on every ſlight indiſpoſition, but rather to let Nature relieve herſelf by faſting a day, and, in attending to the mind, never to forget the body. Much learning is compreſſed in theſe golden precepts, which will be valuable as long as human nature remains the ſame. The attention beſtowed upon the mind, however laudable, ſhould not authoriſe us to neglect the

care

care of the body; the intimate connection ſubſiſting between both requires a due proportion of care and attention to be paid to each. In the ſame degree, as a diſeaſed body ſympathetically torments the mind, ſo does an infirm mind agitate and haraſs the body; and ſuch tortures and reciprocal affections are unavoidably attended with the conſumption of animal life.—What Plutarch enjoins, with reſpect to keeping the head cool and the feet warm, is agreeable to reaſon and experience; we ſhould not, however, imagine, that the grand ſecret of prolonging life conſiſts in the ſole obſervance of theſe maxims. The head and feet are not the only points, in which life is concentrated; they may indeed have a beneficial or pernicious influence on the whole body, and in this reſpect they demand a ſhare of our attention; but no other part ought on that account to eſcape our notice.

I now enter upon a very unpleaſant taſk, namely, that of reviewing a period of darkneſs, during the barbarity of the middle ages, when the progreſs of true knowledge was obſtructed by the moſt abſurd fancies and childiſh conceits; when conjectures, caprices, and dreams ſupplied the place of the moſt uſeful ſciences, of the moſt important truths. Chemiſtry, ſo eſſentially requiſite to explain the phenomena of known and unknown ſubſtances, fell into the hands of jugglers and fanatics;—their ſyſtems, replete with philoſophic nonſenſe, and compoſed of the moſt crude, hete-

rogeneous

rogeneous materials, ſerved rather to nouriſh ſuperſtition than to eſtabliſh facts and illuſtrate uſeful truths. Univerſal remedies, in various forms, met with ſtrenuous advocates and deluded conſumers. The path of accurate obſervation and experiment was forſaken; far from penetrating into the myſterious receſſes of Nature, they bewildered themſelves in the labyrinth of fanciful ſpeculation; they overſtepped the bounds of good ſenſe, modeſty, and truth, and the blind led the blind.

The prolongation of life, too, was no longer ſought for in a manner agreeable to the dictates of Nature; even this intereſting branch of human purſuits was rendered ſubſervient to Chemiſtry, or rather to the confuſed ſyſtem of Alchemy. *Original matter* was looked upon to be the elementary cauſe of all beings; by this they expected literally to work miracles, to tranſmute the baſe into noble metals, to metamorphoſe man in his animal ſtate by chemical proceſs, to render him more durable, and to ſecure him againſt early decline and diſſolution. Millions of veſſels, retorts, and phials were either expoſed to the action of the moſt violent artificial heat, or to the natural warmth of the ſun; or elſe they were buried in ſome dunghill or other fetid maſs, for the purpoſe of apprehending this *original matter*, or obtaining it from putreſcible ſubſtances.

As the ſubſtance called Gold always bore the higheſt value among metals, theſe mongrel philoſophers

ſophers concluded, from a ridiculous analogy, that its value, with reſpect to the preſervation of health, and the cure of diſeaſes, muſt likewiſe ſurpaſs that of all other remedies. The nugatory art of diſſolving it, ſo as to render it potable, and to prevent it from being again converted into metal, employed a multitude of buſy idiots, not only in concealed corners, but in the ſplendid laboratories of the palaces of the great. Sovereigns, magiſtrates, counſellors, and impoſtors, were ſtruck with the common frenzy, entered into friendſhip and alliance, formed private fraternities, and ſometimes proceeded to ſuch a pitch of extravagance, as to involve themſelves and their poſterity in ruinous debts. The real object of many was, doubtleſs, to gratify their avarice and deſire of aggrandiſement: although this ſiniſter motive was concealed under the ſpecious pretext of ſearching for a remedy, that ſhould ſerve as a tincture of life, both for the healthy and diſeaſed; yet ſome among theſe whimſical mortals were actuated by more honourable motives—zealous only for the intereſts of truth, and the well-being of their fellow-creatures. The common people in ſome countries, particularly Italy, Germany, and France, often denied themſelves the neceſſaries of life, to ſave as much as would purchaſe a few drops of the tincture of gold, which was offered for ſale by ſome ſuperſtitious or fraudulent chemiſt: and ſo thoroughly perſuaded were they of the efficacy of this remedy, that it afforded them in every inſtance

inſtance the moſt confident and only hope of recovery. Theſe beneficial effects were poſitively promiſed, but were looked for in vain. All-ſubduing Death would not ſubmit to be bribed with gold, and Diſeaſe refuſed to hold any intercourſe with that powerful Deity, who preſides over the trade and commerce of nations.

As, however, theſe diverſified and almoſt numberleſs experiments were frequently productive of uſeful inventions in the arts and manufactures; and as many chemical remedies of real value were thereby accidentally diſcovered, the great and general attention to thoſe bold projectors, was conſtantly kept alive and excited. Indeed, we are indebted to their curious operations, or rather perhaps to chance, for ſeveral valuable medicines, the excellence of which cannot be diſputed, but which, nevertheleſs, require more precaution in their uſe and application, and more perſpicacity and diligence in inveſtigating their nature and properties, than the original preparers of ſuch articles were able or willing to afford.

All their endeavours to prolong life, by artificial means, could not be attended with beneficial effects; and the application of the remedies thus contrived, muſt neceſſarily, in many caſes, prove detrimental to the health of the patient. In proof of this aſſertion, it will be ſufficient to give a ſlight ſketch of the different views and opinions of the Goldmakers, Roſencrucians, manufacturers of Auſtralian

tralian Salts, of the Drops of Life, and Tinctures of Gold, hunters after the philoſopher's ſtone, &c. &c. Some of theſe enthuſiaſts fancied life to reſemble a flame, from which the body derived warmth, ſpirit, and animation. This flame they endeavoured to cheriſh and to increaſe by their remedies, ſupplying the body with materials to feed the ſame, as we pour oil into a burning lamp.

Others imagined they had diſcovered ſomething inviſible and incorporeal in the air, that important medium in ſupporting the life of man. They pretended to catch, to refine, and ſo to reduce and *materialize* this undefinable ſomething, that it might be ſwallowed in the form of powders or drops; that by its penetrating powers it might inſinuate itſelf into the whole animal frame, invigorating and qualifying it for a longer and healthier duration than uſual.

Others again were fooliſh enough to cheriſh a notion, that they could diveſt themſelves of the properties of matter during this life; that in this manner they might be defended againſt the gradual approaches of diſſolution, to which every animal body is ſubject; and that thus fortified, without quitting their terreſtrial tabernacle, they could aſſociate at pleaſure with the inhabitants of the ſpiritual world.

The Sacred Volume itſelf was interpreted and commented upon by the Operators and Alchemiſts, with a view to render it ſubſervient to their inte-

reſted deſigns. Indiſputable hiſtorical facts recorded in this invaluable book, were treated by them as hieroglyphical ſymbols, which contained chemical proceſſes: and the fundamental truths of the Chriſtian Religion were applied, in a wanton and blaſphemous manner, to the purpoſes of making Gold, and diſtilling the Elixir of Life.

The productions of Alchemy, far from anſwering the purpoſe of prolonging life, have rather a contrary tendency. All the remedies which it affords, are of a heating and ſtimulating nature. The perſon who takes them will feel himſelf more cheerful for ſome time, and on that account he may fancy himſelf more vigorous and juvenile; as they certainly give an additional impulſe to the ſenſations of life, like wine, ſpirits, and all other ſtimulants. But this increaſe of the *ſenſation of life* ſhould by no means be confounded with an increaſe of the *power of life*. It may be even ſafely affirmed, that by the increaſe of vital ſenſations, the career of life itſelf is accelerated, and the conſumption of it ſooner exhauſted; conſequently the duration of the body is neceſſarily ſhortened.

I ſhould not omit to mention, that theſe remedies ſtrongly increaſe the ſenſitive power of man, they prediſpoſe him to ſenſual purſuits, ſtimulate him to commit exceſſes of every kind, incite him to take continual or exceſſive exerciſe, as dancing, and the like, and thus by inevitable conſequence

haſten the waſte and diſſolution of the body. That, for inſtance, which, according to the natural courſe, ought to be expended or conſumed in three days, is diſſipated perhaps in as many jovial hours. This premature loſs is attended with relaxation, irkſomeneſs, and even averſion to life, till a new doſe of ſtimulants reproduces the former falſe vivacity. It fares with the patient here, as it does with the hard drinker, who trembles in the morning that follows his nightly debauch, feels his whole frame relaxed, inactive, and torpid, and is in a manner obliged to take a freſh dram of his favourite liquor, before he can enter on any ſerious buſineſs, with pleaſure or effect.

Theſe famous eſſences, balms, tinctures of life, &c. are farther dangerous, as they contract the ſmall veſſels, ſo neceſſary to the preſervation of life, as well as to the reparation of the loſſes ſuſtained, and thus render them unfit to perform their offices. Hence ariſe rigidity or ſtiffneſs, and exſiccation; the body ſhrivels, and the ſymptoms of old age appear at an earlier period, than they would otherwiſe have done. Man is ſeldom unprovided with the ſupplies of vitality;—every draught of air we inhale, and every particle of food we ſwallow, is a freſh acceſſion to the ſtock of life. But as ſoon as the *ſuſceptibility* or *power of receiving* thoſe ſupplies becomes languid, we then may be conſidered as unfit to perform the functions of life; and all the medicaments of nature and art will

will be found inſufficient to relieve us. He who ſearches for the ſupplies of life in alchemical productions, elixirs, balſamic eſſences, &c. will ſooner or later, but always prematurely, experience the want of ſuſceptibility. Even that impudent boaſter and celebrated *inſurer of lives*, THEOPHRASTUS PARACELSUS, although he pretended to have in his poſſeſſion the ſtone of immortality, died—in his fiftieth year! His vegetable ſulphur was a heating and ſtimulating remedy, partly ſimilar to the Anodyne Liquor of Hoffmann.

The world of ſpirits alſo was invaded, and ſummoned, as it were, to contribute to the prolongation of human life. Spirits were ſuppoſed to have the rule of air, fire, earth, and water; they were divided into particular claſſes, and particular ſervices aſcribed to each. The malevolent ſpirits were oppoſed and counteracted by various means of prevention: the good and tutelary were obliged to ſubmit to a ſort of gentle, involuntary ſervitude. From inviſible beings were expected and demanded viſible means of aſſiſtance—riches—health—friends—and long life. Thus the poor ſpirits were profanely maltreated, nay they were ſometimes puniſhed, and even miſerably flogged in effigy, when they betrayed ſymptoms of diſaffection, or want of implicit loyalty.

As men had thus, in their weakneſs and folly, forſaken the bounds of this terreſtrial ſphere, it will eaſily be believed, that with the help of an exuberant

exuberant imagination, they would make a tranſition to the higher regions—to the celeſtial bodies and the ſtars, to which indeed they aſcribed no leſs a power than that of deciding the deſtinies of men, and which, conſequently, muſt have had a conſiderable ſhare in ſhortening or prolonging the duration of human life.—Every nation or kingdom was ſubjected to the dominion of its particular planet, the time of whoſe government was determined; and a number of aſcendant powers were fictitiouſly contrived, with a view to reduce under its influence every thing which was produced and born during its adminiſtration.

The profeſſors of aſtrology appeared as the confidants of theſe inviſible rulers, and the interpreters of their will; they very well underſtood the art of giving a reſpectable appearance to this uſurped dignity. Provided they could but aſcertain the hour and minute of a perſon's birth, they confidently took upon themſelves to predict his mental capacities, future viciſſitudes of life, diſeaſes, together with the circumſtances, the day, and the hour of his death. Not only the common people, or the leſs informed claſſes of ſociety, but the moſt reſpectable men for learning and abilities, nay even thoſe of the higheſt rank and ſtation, did homage to thoſe "gods of their idolatry," and lived in continual dread of their occult powers. With anxious countenances and attentive ears, they liſtened to the effuſions of thoſe ſelf-appointed

oracles, which prognoſticated the bright or gloomy days of futurity. Even phyſicians were ſolicitous to qualify themſelves for an appointment no leſs lucrative than reſpectable:—they forgot, over the dazzling hoards of Mammon, *that they were peculiarly and profeſſedly the pupils of Nature.*—The curious ſtudent in the Univerſities found every where public Lecturers, who undertook to inſtruct him in the profound arts of divination, chiromancy, and the famous *cabala*.

Not to mention other inſtances, I ſhall cite that of the noted *Thurneiſen*, in the laſt century, who was inveſted at Berlin with the reſpective offices of Printer to the Court, Bookſeller, Almanack-maker, Aſtrologer, Chemiſt, and Firſt Phyſician. Meſſengers daily arrived from the moſt reſpectable houſes in Germany, Poland, Hungary, Denmark, and even from England, for the purpoſe of conſulting him reſpecting the future fortunes of new-born infants, acquainting him with the hour of their nativity, and ſoliciting his advice and directions as to their management. Many volumes of this ſingular correſpondence are ſtill preſerved in the Royal Library at Berlin. The buſineſs of this fortunate adept increaſed ſo rapidly, that he found it neceſſary to employ a number of ſubaltern aſſiſtants, who, together with their maſter, realiſed conſiderable fortunes. He died in high reputation and favour with his ſuperſtitious cotemporaries; and Thurneiſen's Aſtrological Almanack

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is yet publiſhed in ſome of the leſs enlightened provinces of Germany. But it may be aſked, how it happens, that an art which determines the fate of mortals, and aſcertains the impaſſable limits of human life, can at the ſame time ſerve as the means of prolonging it? This I ſhall now proceed to account for. The teachers of divination maintained, that not only men, but all natural bodies, plants, animals, nay whole countries, including every individual place and family, were under the government of ſome particular planet. As ſoon as the maſters of the OCCULT SCIENCE had diſcovered, by their tables, under what conſtellation the misfortune or diſtemper of any perſon originated, nothing further was required, than that he ſhould remove to a dwelling ruled by an oppoſite planet, and confine himſelf excluſively to ſuch articles of food and drink, as were under the influence of a different ſtar. In this artificial manner, they contrived to form a ſyſtem, or peculiar claſſification of plants, namely, lunar, ſolar, mercurial, and the like—and hence aroſe a confuſed maſs of dietetic rules, which, when conſidered with reference to the purpoſes of health, cleanlineſs, exerciſe, &c. form a remarkable contraſt to thoſe of the Greeks.

Neither was this preventive and repelling method confined merely to perſons ſuffering under ſome bodily diſorder. In the caſe of individuals who enjoyed a good ſtate of health, if an unlucky con-

ſtellation happened to forebode a ſevere diſeaſe, or any other misfortune, they were directed to chooſe a place of reſidence influenced by a more friendly ſtar;—or to make uſe of ſuch aliment only as, being under the anſpices of a propitious ſtar, might counteract the malignant influence of its adverſary.

It was alſo pretty generally believed and maintained, that a ſort of intimate relation or ſympathy ſubſiſted between metals and plants; hence the names of the latter were given to the former, in order to denote this ſuppoſed connection and affinity. The correſponding metals were melted into a common maſs, under a certain planet, and were formed into ſmall medals or coins, in hopes, and with the firm perſuaſion, that he who carried ſuch a piece about his perſon, might confidently expect the whole favour and protection of the planet thus repreſented.

The tranſition from one degree of folly to another is eaſy; and this may help us to account for the ſhocking deluſions practiſed in the manufacturing and wearing of metallic amulets of a peculiar mould, to which were attributed, by a ſort of magic influence, the power and protection of the planet, to whom they related: theſe charms were thought to poſſeſs virtue ſufficient to over-rule the bad effects preſaged by an unlucky hour of birth, to promote to places of honour and profit, and to be of potent efficacy in matters of commerce

merce and matrimony. The German ſoldiers, in the dark and ſuperſtitious ages, believed, that if the figure of Mars, caſt and engraved in the ſign of the Scorpion, were worn about the neck as an amulet, it would render them invulnerable, and inſure ſucceſs to their military enterpriſes: hence amulets were found upon every ſoldier, either killed in battle or taken priſoner.

But let us quit a ſubject which excites diſguſt, as it exhibits ſuch glaring deviations from reaſon and truth. It is much more pleaſant to dwell upon examples, which afford ſatisfactory proof, that the human mind has never been *entirely and univerſally* debaſed, and that there have always exiſted ſome individuals, though few in number, who would not ſubmit their necks to the yoke of popular prejudice, and whoſe ſuperior talents and virtues reſcued them from the impoſitions of general folly or depravity. A memorable inſtance of this rare merit is to be found in the Noble Venetian LEWIS CORNARO, whoſe hiſtory illuſtrates this agreeable and inſtructive truth, that Nature, left to herſelf, or, in other words, a properly choſen mode of life and diet, regularly perſiſted in, will atchieve great things; and that a frame, diſordered and even reduced to a ſtate bordering on the grave, may yet be re-eſtabliſhed, and preſerve its health and vigour for a great number of years.

Cornaro had been a profeſſed epicure and libertine, till he entered into the fortieth year of his

age. His conſtitution was ſo far reduced by the colic, rheumatic pains, fevers, &c. that his phyſicians at length gave him up, aſſuring him he could not ſurvive much longer than two months; that no medicines whatever could avert this cataſtrophe, and that the only poſſible means of preſerving his life would be a regular adherence to a frugal diet. He punctually followed this advice, perceived ſymptoms of convaleſcence within a few days after entering on his plan of reformation, and, after the lapſe of twelve months, was not only completely reſtored, but found himſelf in a better ſtate of health than he had ever been during any period of his life. He reſolved therefore to confine himſelf to a ſtill more parſimonious regimen, and to take nothing more than what he judged to be abſolutely requiſite for his ſupport. Thus, during *ſixty* years, he confined himſelf to exactly twelve ounces of food a-day, (bread and other nouriſhment included,) with thirteen ounces of beverage. It ſhould be alſo obſerved, that during this long period he carefully avoided violent heat, cold, paſſions, and extremes of every kind; and by rigidly and uniformly adhering to this moderate diet, not only his body, but his mind alſo, acquired ſo determined a tone, that no common incidents could affect them. At a very advanced age he loſt a law-ſuit, which involved pecuniary concerns of great importance, and on account of which two

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of his brothers died of broken hearts;—but he ſtill retained his priſtine health and tranquillity. His carriage happening on ſome occaſion to be overſet, he was dragged by the horſes, in conſequence of which his arms and legs were diſlocated. He cauſed them, however, to be reduced again, and, without taking any medicines, we find him in a ſhort time reſtored.

A ſtriking inſtance of the dangerous effects likely to attend the ſlighteſt deviation from long cuſtom and habit, is the following: When Cornaro had reached his eightieth year, his friends prevailed upon him to add a ſmall portion to his daily quantum of food; alleging that his advanced age neceſſarily called for additional ſupport. Although he was not convinced by this argument, being of opinion, that, with the general decreaſe of ſtrength, our powers of digeſtion are likewiſe impaired, and that we ought to diminiſh rather than to increaſe our food, in proportion to the decay of nature; yet he yielded to the ſolicitations of his friends, and increaſed his food from twelve to fourteen, and his drink from thirteen to ſixteen ounces. "Scarcely," to quote the words of our dietetic veteran, "had I proceeded in this altered mode "of living for ten days, before I found my ſpirits "viſibly affected; a fretful, peeviſh temper ſuc-"ceeded to my former cheerfulneſs and gaiety, "ſo that I became a burden to myſelf and others.

"This change of temper was followed by other "ſymptoms ſtill more alarming. On the twelfth "day, I was attacked with a pain in my ſide, "which continued for twenty-four hours together, "and ſoon after found myſelf oppreſſed by a fever "that raged with unabating fury for thirty-five "days, ſo that my life was at times deſpaired of. "By the bleſſing of God, however, on returning "to my former regimen, I recovered from this "ſhock, and now enjoy, in my eighty-third year, "perfect health of body and ſerenity of mind. I "can mount my horſe without aſſiſtance; I can "climb ſteep precipices, and but lately I wrote a "comedy abounding with traits of innocent mirth "and raillery. When I return home, after being "engaged in my private affairs, or from attending "the councils of ſtate, I feel inexpreſſible ſatiſ-"faction in the company of my grandchildren, "eleven in number, whoſe education, amuſement, "and ſongs, are the comfort of my age. I fre-"quently join them in ſinging, as my voice is now "ſtronger and clearer than I ever knew it to be in "my youth, and as my happineſs is not diſturbed "by the complaints, the moroſeneſs, and diſcon-"tented humours, ſo frequently the lot of intem-"perate old age."

In this happy frame of body and mind, Cornaro attained to his hundredth year; his virtuous and memorable example, however, has hitherto had but few followers. He found by *actual obſervation*

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and *experience*, that a ſtrict and uniform regimen, or a regular daily allowance of food and drink aſcertained by weight, was the beſt method *he* could purſue, for the purpoſe of prolonging his life. He did not wiſh however to be underſtood, nor does it follow in general, that this or any other preciſe portion of nutriment is to be held out as a proper ſtandard, by which *all perſons* are to regulate their diet. His advice, that we ſhould take no more food than what is abſolutely neceſſary to our ſubſiſtence, may be thus explained; namely, that the reſtoration of ſtrength, derived from ſupplies of nutriment, ought to bear an exact proportion to the loſſes ſuſtained by the body. He, for inſtance, who ſpends little of his time in bed, and much in the open air, takes frequent exerciſe, is conſtantly employed in ſome laborious occupation, makes long journies on foot or horſeback, or the like, will feel himſelf refreſhed and ſtrengthened after partaking of a plentiful meal, and cheering beverage; and ſuch a repaſt is even indiſpenſable to him, to recruit the ſources of his muſcular ſtrength and activity.——If, on the other hand, a perſon who lounges away half of his time in bed, or upon the ſofa, were to conſume a quantity of food equal to the former, he would no doubt feel himſelf heavy and uncomfortable. Yet here too, the conſequent loſs of ſtrength may vary in degree, in different ſedentary perſons; and this circumſtance will afford me an oppor-

opportunity, in the ſequel, to apply to individual caſes the doctrine ſuggeſted by the experience of Cornaro.

There was another period, during which *blood-letting* came into general uſe, and obtained great credit, as one of the moſt effectual means of prolonging life: the ſuperfluity and vitiated ſtate of the blood, or what phyſicians term a *plethoric habit*, being looked upon, at the ſame time, as a principal means of ſhortening life. Through the veins thus regularly opened, at certain ſeaſons, the ſuperfluous or vitiated blood was ſuppoſed to be emitted, while that of a more ſalubrious quality was left behind. Conſidered as a medical remedy, phlebotomy muſt certainly be allowed to poſſeſs its uſes, and it is ſometimes a neceſſary expedient, to produce an immediate diminution in the fulneſs of the blood, particularly when the time is too ſhort, and the danger too preſſing, to admit of any other method for effecting that purpoſe. As there can be no doubt, that blood-letting is an invaluable remedy in many diſorders, it is the more peculiarly incumbent on the practical phyſician, to diſtinguiſh with care thoſe caſes, in which imminent danger may be averted, and health reſtored by the uſe of it. I am of opinion, that there are two caſes, and only two, in which veneſection is likely to be attended with real advantage; 1ſt, When it is required to prevent the fluids gaining acceſs to the parts more eſſential to life; and, 2dly, Where means

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muſt be ſpeedily uſed, to counteract a threatened inflammation in the inteſtines. But, even in theſe two caſes, the intelligent phyſician is at no loſs for other remedies, which may be frequently adminiſtered with a greater probability of ſucceſs. In the treatment of every diſorder, it is neceſſary to ſingle out that remedy, which is found moſt ſuitable to the ſtage of the complaint. And here we have no occaſion to ſtart the queſtion, Whether the method and the means, by which the diſeaſe is checked and health reſtored, are, in the end, beſt calculated to prolong the life of the patient? Phyſicians profeſſionally look upon every diſeaſe as an evil, which cannot be too ſpeedily removed; and it would be to hazard the recovery of their patients, in many caſes, were they to waſte time in reflecting upon the conſequences of the remedy with reſpect to its influence on the duration of life. Hence the art of prolonging life, ſtrictly ſpeaking, is not a diſtinct branch of medicine, but rather forms a ſeparate art, and as ſuch is the common property of all: it ſhould therefore conſtitute a part of the education and ſtudies of every rational individual, whatever be his other engagements and occupations.—The abſurd notion, that blood-letting is uſeful and neceſſary to the prolongation of human life, is ſtill pretty generally received among the common people of all countries. Neither the *good* nor the *bad* days, ſuperſtitiouſly marked in the almanacks for amuſing the vulgar, can

can palliate or juſtify the miſchiefs, with which this dangerous error is pregnant. Bleeding can be of ſervice only, when it is performed at a proper time; and to expreſs my opinion of it, in a few words, *it is always noxious to the healthy.*

The blood contains and affords to the bones, ligaments, tendons, membranes, muſcles, nerves, veſſels, in ſhort, to the whole organized body, all the parts, which form the bones, ligaments, tendons, &c. Each of theſe parts is evolved from the blood, and adapted to its proper place, in ſo artificial a manner, that the human mind is totally at a loſs to comprehend, how this operation is performed; neither have the reſearches of the moſt acute and attentive obſervers been able to account for it. And as the blood ſerves to repleniſh the diminution, and to make up the loſſes, which thoſe parts occaſionally ſuſtain, it may be conſidered as the original ſource of our whole organization. By its ſtimulating powers it alſo cauſes the heart and the arteries to contract; and by that means preſerves the circulating motion, by which it is propelled through all the parts of the body, for the purpoſes deſigned by nature.

Now, it requires little reflection to perceive, that he who waſtes this vital fluid, thereby obſtructs, and, as it were, cuts off the ſources of his ſupport and regeneration. And though it be true, that the blood evacuated by periodical bleedings is ſoon reproduced by the activity of the vital powers, yet

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this reſtoration is not effected without conſiderable efforts, and at the expence of the whole machine. As this exertion, therefore, is a great preſſure upon the vital powers, it muſt of courſe be attended with a proportionate degree of their conſumption. It is too well known, that the corrupted part of the blood cannot be ſeparated from the maſs, ſo that the ſound and uncorrupted particles alone may remain behind. If the quality of the blood ever become vitiated and diſeaſed; if it be too thick and viſcous, or too acrid, and diſſolved, the whole maſs participates in the infectious taint; neither is it in the power of art, to contrive any method, by which the corrupted part may be kept aſunder, from that which is in a ſound ſtate. —It would be equally unreaſonable to expect, that a ſpoiled caſk of wine could be cured of its tartneſs, by drawing or tapping the acid and corrupted portion from the top, and leaving the ſweet and wholeſome part behind.—Laſtly, experience has ſhewn in numberleſs inſtances, collected from different obſervations, that perſons accuſtomed to frequent blood-letting are not only rendered more delicate in their conſtitutions, and thereby more ſubject to diſeaſes, but alſo that they die, for the moſt part, at an earlier age than others; and although caſes have occurred of ſome perſons who, having been bled twice or four times a-year, have nevertheleſs arrived at a conſiderable age, they can only prove, that veneſection was to them a

proper medical remedy, perhaps adapted to their peculiar habit of body; or that the activity of their vital powers, their mode of life, and other favourable circumſtances, internal and external, may have been ſufficient to counterbalance the dangerous conſequences, reſulting from the frequent loſs of this eſſential fluid.

On the Doctrine of Transfuſion.

At a time, when the ſhortneſs of life was imputed to a diſtempered ſtate of the blood; when all diſeaſes were aſcribed to this cauſe, without attending to the *whole* of what relates to the moral and phyſical nature of man, a concluſion was eaſily formed, that a radical removal of the corrupted blood, and a complete renovation of the entire maſs, by ſubſtitution, was both practicable and effectual. The ſpeculative mind of man was not at a loſs to deviſe expedients, or rather attempts, for effecting this deſirable purpoſe; and this undoubtedly was one of the boldeſt, moſt extraordinary, and moſt ingenious attempts ever made to lengthen the period of human life. I allude here to the famous ſcheme of *transfuſion*, or of *introducing the blood of one animal body into that of another*; a curious diſcovery, attributed to Andreas Libavius, Profeſſor of Medicine and Chemiſtry in the Univerſity of Halle, who, in the year 1615, publicly

publicly recommended experimental eſſays to aſcertain the fact. Libavius was an honeſt and ſpirited oppoſer of the Theoſophic Syſtem, founded by the bombaſtic Paracelſus, and ſupported by a numerous tribe of credulous and frantic followers. Although Libavius was not totally exempt from the faſhionable follies of that age, ſince he believed in the tranſmutation of metals, and ſuggeſted to his pupils the wonderful powers of *potable gold*; yet he diſtinguiſhed rational Alchemy from the fanatical ſyſtems then in vogue, and zealouſly defended the former againſt the diſciples of Galen, as well as thoſe of Paracelſus. He made a number of important diſcoveries in Chemiſtry, and was unqueſtionably the firſt profeſſor in Germany, who read Chemical Lectures, upon pure principles of affinity, unconnected with the extravagant notions of the Theoſophiſts*.

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* As this remarkable ſect was founded upon the doctrines of Paracelſus, during the latter part of the ſixteenth and the beginning of the ſeventeenth centuries; and as the ſociety known by the name of Roſecrucians, or Roſencrucians, has not been without its followers and propagators, in different ſhapes, even to the preſent time, I ſhall here preſent the reader with a conciſe account of the origin and tenets of that fanatical ſect.

We find this order firſt publicly announced to the world, in a book publiſhed in the German language, at Regenſburg, in the year 1614, with the following title: "*The "Univerſal and General Reformation of the World, together with*

The first experiments relative to the transfusion of the blood, appear to have been made, and that with

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"*an Account of the famous Fraternity of the Roſencrucians.*" In the work is an intimation, that the members of the ſociety had been ſecretly at work, for a century preceding, and that they had come to the knowledge of many great and important ſecrets, which, if communicated to the world, would promote the happineſs of man. An Adventurer of the name of CHRISTIAN ROSENKREUZ is ſaid to have founded this order, in the fourteenth century, after being previouſly initiated into the ſublime wiſdom of the Eaſt, during his travels in Egypt and Fez. According to what we can learn from this work, the intention of the founder, and the final aim of the ſociety, appear to have been to accumulate wealth and riches, by means of ſecrets known only to the members; and by a proper diſtribution of theſe treaſures among Princes and Potentates, to promote the grand ſcheme of the ſociety, by producing "*a general revolution of all things.*" In their "Confeſſion of Faith" are many bold and ſingular dogmas; among others, that the end of the world is at hand; that a general reformation of men and manners will ſpeedily take place; that the wicked ſhall be expelled or ſubdued, the Jews converted, and the doctrine of Chriſt propagated over the whole earth. The Roſencrucians not only believed that theſe events muſt happen; but they alſo endeavoured to accelerate the ſame by their exertions. To their faithful votaries and followers they promiſed abundance of celeſtial wiſdom, unſpeakable riches, exemption from diſeaſe, an immortal ſtate of ever-blooming youth, and, above all, *the Philoſopher's Stone*. Learning and culture of the mind were, by this order, conſidered as ſuperfluous, and deſpiſed. They found all knowledge contained in the Bible; this, however, has been ſuppoſed rather a pretext to obviate a charge, which has been brought againſt them,

with great propriety, on the lower animals. The blood of the young, healthy, and vigorous was transfused into the old and infirm, by means of a delicate tube, placed in a vein opened for that purpose. The effect of this operation was surprising and important: the aged and decrepit animals were soon observed to become more lively, and to move with greater ease and rapidity. By the inde-

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them, of not believing in the Christian Religion. The truth is, they consider themselves as superior to Divine Revelation, and believe every useful acquisition, every virtue to be derived from the influence of the Deity on the soul of man. In this, as well as many other respects, they appear to be followers of Paracelsus, whom they profess to revere as a messenger of the Divinity. Like him, they pretend to cure all diseases, through *Faith* and the power of imagination; — to heal the most mortal disorders by a touch, or even by simply looking at the patient. The Universal Remedy was likewise a grand secret of the order, the discovery of which was promised to all its faithful members.

I think it unnecessary to enumerate any more of such impious fancies, if the Founder of this still lurking sect, now partly revived, had not asserted with astonishing effrontery, that human life was capable of prolongation, like a fire kept up by combustible matter, and that he was in the possession of a secret, which could verify his assertion. It is evident, however, from the testimony of the above mentioned Libavius, a man of unquestionable veracity, that this doughty champion in Medical Chemistry, or rather Alchemy, Paracelsus, notwithstanding his vaunting assurances, died at Salzburg in Germany, in the Hospital of St. Stephen's, in 1541; and that his death was principally brought on by the irregular and dissolute mode of life, which he had for a long time pursued.

fatigable exertions of LOWER, in England, of DENIS, in France, and of MORITZ HOFFMAN, and others, in Germany, this artificial mode of renovating the life and ſpirits was ſucceſsfully followed up, and even brought to ſome degree of perfection.—The vein uſually opened in the arm of a patient was reſorted to for the purpoſe of tranſfuſion; into this a ſmall tube was placed in a perpendicular direction; the ſame vein was then opened in a healthy individual, but more frequently in an animal, into which another tube was forced in a reclining direction; both the ſmall tubes were then ſlided into one another; and in that poſition the delicate act of transfuſion was ſafely performed. When the operation was completed, the vein was tied up in the ſame manner as in blood-letting.—Sometimes a quantity of blood was diſcharged from the patient, previous to the experiment taking place. As few perſons however were to be found, that would agree to part with their blood to others, recourſe was generally had to animals, and moſt frequently to the calf, the lamb, and the ſtag. Theſe being laid upon a table, and tied ſo as to be unable to move, the operation was performed in the manner before deſcribed.

In ſome inſtances, the good effects of theſe experiments were evident and promiſing, while they excited the greateſt hopes of the future improvement and progreſs of this new art. But the increaſing abuſes, to which it led bold and inexpert

pert practitioners, together with the great number of caſes, wherein it proved unſucceſsful, induced the different governments of Europe to put an entire ſtop to the practice, by the ſtricteſt prohibitions. And, indeed, ſo long as the conſtitutions of men differ from each other materially as they now do, this is, and ever will be, a hazardous, if not a deſperate remedy.—The blood of every individual is *ſui generis*, or of a peculiar nature, and ſuits or accords, as it were, with that body *only*, to which it belongs, and in which it is generated. Hence our hopes of prolonging human life, by artificial evacuations and injections, muſt neceſſarily be diſappointed.

We are not however to ſuppoſe, that theſe and ſimilar purſuits, during the times of which we treat as well as thoſe which ſucceeded, were ſolely or chiefly followed by mere adventurers and fanatics. No! the greateſt wits and geniuſes of thoſe times, together with the moſt learned and eminent men, deemed them objects worthy of their ſedulous attention. Lord Bacon, that ſagacious explorer of the arcana of Nature, that luminary of ſcience and talents, repreſents life as a flame, which is continually waſted by the ſurrounding atmoſphere, and aſſerts that *all the fluids* of the body may from time to time be renovated, and require ſuch renovation. The remedies, which he prefers and preſcribes, are conformable to this hypotheſis. To prevent the *external* conſumption produced by the

circumambient air, he recommends the bath and, after quitting it, friction with oils and salves, with a view to fortify the pores, and exclude the influence of the external air. As means to counteract the *internal* waste of the body, he inculcates the propriety of a cooling, moderate diet, and, above all, extols the narcotic or soporific remedies, as the true balm of life, and the best adapted to attain the desired effect.—Tranquillity of mind, and a cooling diet, may no doubt be very necessary in some cases, where there is too great an irritability of temperament, and where the circulation of the blood is too rapid. But to a phlegmatic habit, they will rather be injurious than serviceable. Narcotic remedies, too, are but ill qualified to cool and to moderate the body, since they never fail to act as a certain stimulus, are attended with heat and relaxation, and therefore must accelerate the consumption of the vital powers: that sleep, also, which is artificial, and which they have a tendency to procure, cannot upon the whole be salutary. It is no less evident, that the vital power supplied by heat or *caloric* (which is principally evolved from the air *, and introduced into the body by

* We shall have occasion to institute a particular inquiry into the properties of *air*, in the next Chapter, from which it will appear, that one species of air is more noxious to the vital power than another, and that there is a greater consumption of it in one, than in the other.

means

means of reſpiration) muſt be much leſs conſiderable during ſleep, than while we are awake.

For improving the fluids of the aged, and renovating the dry and corrupted part of them, Lord Bacon thinks, nothing can be put in competition with powerful laxatives, and adviſes the uſe of a full courſe of them, every two or three years at leaſt. Theſe remedies are, in his opinion, the beſt qualified to evacuate vitiated humours, and afterwards to produce, in lieu of them, milder and more healthy juices. The exhauſted and, as it were, thirſty veſſels may be repleniſhed and ſtrengthened, according to his ideas, by a refreſhing and nouriſhing diet.

However plauſible this theory may appear, the execution of it is impracticable, and the baſis on which it reſts, merely conjectural. If it were poſſible to withdraw the corrupted part of the fluids from the body, by means of evacuants, and at the ſame time to remove the *cauſes*, which produce this tendency to corruption, then the doctrine laid down by Lord Bacon would deſerve every praiſe, and the moſt minute attention to its merits. But it ought to be obſerved, that the activity and energy of *the whole* organized ſyſtem is indiſpenſably neceſſary in the proceſs of ſeparating the noxious or uſeleſs particles. As, therefore, laxatives remove only the more watery fluids; as they have a bad effect on the ſtomach and inteſtines, by rendering them too irritable, and conſequently leſs

tonic or vigorous; as the bile, a fluid ſo eſſential to the concoction of food and aſſimilation of alimentary matter, is thereby uſeleſsly waſted; as the balance between the ſolid and fluid parts of the body is in this manner deſtroyed; and as, upon the whole, the vital powers muſt ſuſtain a conſiderable degree of diminution in affording ſupplies, to repair what is loſt;—the precarious nature of *evacuants*, as the means of prolonging human life, appears too evident to require further illuſtration.

It is not, therefore, in ſuch remedies as theſe, which can only be employed with ſafety, where a judicious attention is paid to the caſe and circumſtances of the patient, that we ought to confide, as the moſt proper to prolong the period of our exiſtence: we muſt ſearch for means leſs dangerous and more effectual.

There is a pretty numerous claſs of men, who profeſs to calculate the length of their lives, not ſo much by the number of years or days they have lived, as by the uſe they have made of them, or, to ſpeak more plainly, by the quantum of ſenſual pleaſure they have enjoyed. Perſons of this caſt, though fully ſenſible of the unavoidable conſequences, are not averſe to what is called *faſt living*. Accuſtomed to reckon only upon the enjoyments of life, they wiſh to attain theſe in a ſhorter period of time, and in more rapid ſucceſſion, rather than ſlowly and by degrees; eſpecially as the duration of our life ever remains uncertain. Men of this

ſanguine

ſanguine character may be aptly compared to a plant forced in a hot-houſe, which will indeed grow up ſuddenly, but, if contraſted with a plant of ſlower growth, or any kind of fruit which gradually ripens to maturity, will be found much degenerated, neither poſſeſſing the ſolidity and ſtrength of ſtalk, nor the aſtringent, aromatic, and other properties, in that vigour and perfection, which we find in vegetables raiſed in the open air. Many ſimilar hot-houſe plants are diſcoverable among men, in the different ſtages of ſociety. In childhood, they diſplay the premature acquirements of youth; in youth they ſhow the ſenſe, ambition, and other qualifications of manhood; and before they have well paſſed through the prime of virility, they are either ſnatched away by untimely death, or their faculties become blunted and impaired.

It is the unalterable plan of Nature, to proceed, in every one of her operations, by degrees; all outrage and extravagance militate againſt her eſtabliſhed laws.—The *true* enjoyment of life does not conſiſt in the haſty purſuit of pleaſure, nor in the intemperate indulgence of our ſenſual appetites. The epicure is ſoon laid up by dangerous ſurfeit, reſulting from indulgence in a variety of highly-flavoured diſhes, and is obliged to ſpend that time in reluctant confinement, which he propoſed to devote to his bottle, to his debauchery, or to ſome ſcene of gaiety; he is compelled to lead as it were

a vegetable life, ſcarcely pitied by his friends, and, in the fulleſt ſenſe of the word, to *exiſt* rather than to *live*.

In one reſpect, we have little occaſion to extol our own enlightened age, at the expence of thoſe which are ſo frequently and juſtly termed *dark*: I allude to the bold and artful deſigns of impoſture, and particularly *medical impoſture*. We daily ſee illiterate and audacious empirics ſport with the lives of a credulous public, that ſeem obſtinately reſolved to ſhut their ears againſt all the ſuggeſtions of reaſon and experience.

The hoſt of empirics and mountebanks, to be found in our great cities, and the tinctures, eſſences, and balms of life ſo much in vogue with even the poliſhed claſſes; the celeſtial beds, the enchanting magnetic powers, lately introduced into this country by *Meſſmer* and his numerous diſciples; the prevailing indifference to all dietetic precepts; the ſingular impoſition practiſed on many females, in perſuading them to wear the inert *acromatic belts* (which ſhall be further noticed in the eighth chapter); the ſtrange infatuation of the opulent to pay *five guineas* for a pair of *metallic tractors* *, not

* The Monthly Reviewers, in examining Mr. Perkins's pamphlet on that ſubject, after having informed the reader that a Dr. Willard, an American practitioner, the author himſelf, and four other perſons, had *purpoſely* burnt themſelves with a red-hot piece of iron, ſo that bliſters were raiſed, in order to *experience* the anodyne effects of the tractors,

not worth a fixpence; the tables for blood-letting, and other abſurdities ſtill inſerted in popular almanacks,

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tractors, and that all theſe living witneſſes obtained relief in a few minutes, proceed in the following words:

"This zeal for knowledge is truly edifying, eſpecially as the tractors are generouſly preſented to the public at *only* five guineas a pair; and it is clear that one pair would ſuffice to cure all the burns and ſcalds of a large pariſh. Why are not ſuch luculent experiments repeated here? If Mr. P. or any admirer of the diſcovery would ſubmit to have a red-hot poker run into ſome part of his body not neceſſary to life (into *that part where honour's lodged*, according to Butler, for example,) in any public coffee-houſe within the bills of mortality, and would afterwards heal the wound in preſence of the company, in ten minutes, or in half as many hours, by means of the tractors, the moſt ſtony-hearted infidel could not reſiſt ſuch a demonſtration. Why trifle with internal inflammations, when ſuch an outward and viſible ſign might be afforded?

"Mr. Perkins has taken ſome pains, in the firſt part of his pamphlet, to ſhew that the operation of his rods is not derived from animal magnetiſm. In our opinion, this is an unneceſſary piece of trouble in England, where there is a conſtant ſucceſſion of ſimilar pretenſions. The *virgula divinatoria*, and the *baguette* of the juggler, are the genuine prototypes of this myſtery. We were indeed rejoiced, on Dr. Perkins's account, to find that the Connecticut Society had only denounced him as a *Meſmeriſt*; we trembled leſt he ſhould have been put into the inquiſitorial hands of the old women, as a white witch.

"To trace the relations and dependencies of projects ſimilar to that of Dr. Perkins, would now be a work of more labour than utility. The fund of public credulity is an inexhauſtible reſource for thoſe who can reſolve to levy contributions on it. In vain is the ſpirit of quackery exor-

ciſed

nacks, ſufficiently evince, that this is far from being the "Age of Reaſon;" that the Temple of Superſtition is yet thronged with numberleſs votaries; that human reaſon is ſtill a ſlave to the moſt tyrannical prejudices; and that there is no readier way to excite general attention and admiration, than to affect the myſterious and the marvelous.

The viſionary ſyſtem of JACOB BÖHMEN has lately been revived in ſome parts of Germany. The ghoſts and apparitions, which have diſappeared from the times of THOMASIUS and SWEDENBORG, have again, it ſeems, left their graves, to the great terror of fanaticiſm. New and unheard-of prophets announce their Divine miſſion, and, what is worſe, find implicit believers! The inventors of ſecret medicines are rewarded by patents, and obtain no ſmall celebrity; while ſome of the more conſcientious but leſs fortunate adepts endeavour to amuſe the public with *popular ſyſtems of medicine!* Theſe, however, are harmleſs, in compariſon

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ciſed in one form; it riſes again immediately, '*with twenty ghaſtly murders on its head, to puſh us from our ſtools.*' We, who have contemplated the progreſs of real knowledge, during a long courſe of years, have ſeen many bubbles like this glitter for a moment, and then diſappear for ever. People may talk of *Meſmeriſm* or *Perkiniſm*; but we conſider all ſuch varieties as belonging to the old and extenſive claſs, *Charlatāniſm*."—*Monthly Review*, April 1799, pp. 463 and 464.

with

with the daring experiments, of which I ſhall briefly ſketch the hiſtory.

One of the moſt dazzling and ſucceſsful Inventors in modern times was MESSMER, who began his career of Medical Knight-errantry at Vienna. His houſe was the mirror of high life; the rendezvous of the gay, the young, the opulent, enlivened and entertained with continual concerts, routs, and illuminations. At a great expence he imported into Germany the firſt *Harmonica* from this country; he eſtabliſhed cabinets of natural curioſities, and laboured conſtantly and ſecretly in his chemical laboratory; ſo that he acquired the reputation of being a great Alchemiſt, a philoſopher ſtudiouſly employed in the moſt uſeful and important reſearches.

In 1766 he firſt publicly announced the object and nature of his ſecret labours:—all his diſcoveries centered in the *magnet*—which, according to his hypotheſis, was the greateſt and ſafeſt remedy hitherto propoſed againſt all diſeaſes incident to the human body. This declaration of Meſſmer excited very general attention; the more ſo, as about the ſame time he eſtabliſhed an hoſpital in his own houſe, into which he admitted a number of patients *gratis*. Such diſintereſtedneſs procured, as might be expected, no ſmall addition to his fame. He was, beſides, fortunate in gaining over many celebrated phyſicians to eſpouſe his opinions, who laviſhed the greateſt encomiums on his new art,

art, and were inſtrumental in communicating to the public a number of ſucceſsful experiments. This ſeems to have ſurpaſſed the expectations of Meſſmer, and induced him to extend his original plan farther than it is likely he firſt intended. We find him ſoon afterwards aſſuming a more dogmatical and myſterious air, when, for the purpoſe of ſhining excluſively, he appeared in the character of a *Magician*—his pride and egotiſm would brook neither equal nor competitor.

The common Loadſtone, or Mineral Magnet, which is ſo well known, did not appear to him ſufficiently important and myſterious: he contrived an unuſual and unknown one, to the effect of which he gave the name of '*Animal Magnetiſm.*' After this he proceeded to a ſtill bolder aſſumption, every where giving it out, that the inconceivable powers of this ſubtle fluid were centered in his own perſon. Now the Mono-drama began; and Meſſmer, at once the hero and chorus of the piece, performed his part in a maſterly manner. He placed the moſt nervous, hyſteric, and hypochondriac patients oppoſite to him; and by the ſole act of ſtretching forth his finger, made them feel the moſt violent ſhocks. The effects of this wonderful power excited univerſal aſtoniſhment; its activity and penetrability being confirmed by unqueſtionable teſtimonies, from which it appeared, that blows, reſembling thoſe given by a blunt iron, could be imparted by the operator, while he

himſelf was ſeparated by two doors, nay even by thick walls. The very looks of this Prince of Jugglers had the power to excite painful cramps and twitches.

This wonderful tide of ſucceſs eaſily inſtigated his indefatigable genius to bolder attempts, eſpecially as he had no ſevere criticiſms to apprehend from the ſuperſtitious multitude. He roundly aſſerted things, of which he never offered the leaſt ſhadow of proof; and for the truth of which he had no other pledge to offer, but his own high reputation. At one time he could communicate his magnetic power to paper, wool, ſilk, bread, leather, ſtones, water, &c.—at another he pronounced, that certain individuals poſſeſſed a greater degree of ſuſceptibility for this power than others.

It muſt be owned, however, to the honour of his cotemporaries, that many of them made it their buſineſs to encounter his extravagant pretenſions, and to refute his dogmatical aſſertions with the moſt convincing arguments. Yet he long enjoyed the triumph of being ſupported by blind followers; and their too great number completely overpowered the ſuffrages of reaſon.

Meſſmer perceived at length, that he ſhould never be able to reach, in his native country, the point which he had fixed upon, as the term of his magnetical career. The Germans began to diſcredit his pompous claims; but it was only after repeated failures in ſome important promiſed cures,

that

that he found himſelf under the neceſſity of ſeeking protection in Paris. There he met with a moſt flattering reception, being careſſed, and in a manner adored, by a nation which has ever been extravagantly fond of every thing new, whimſical, and myſterious. Meſſmer well knew how to turn this national propenſity to his own advantage. He addreſſed himſelf particularly to the weak; to ſuch as wiſhed to be conſidered men of profound knowledge, but who, when they are compelled to be ſilent from real ignorance, take refuge under the impenetrable ſhield of myſtery. The faſhionable levity, the irreſiſtible curioſity, and the peculiar turn of the Pariſians, ever ſolicitous to have ſomething intereſting for converſation, to keep their active imagination in play, were exactly ſuited to the genius and talents of the inventor of Animal Magnetiſm. We need not wonder, therefore, if he availed himſelf of their moral and phyſical character, to enſure eaſy entrance to his doctrines, and ſucceſs to his pretended experiments: in fact, he found friends and admirers, wherever he made his appearance *.

What

* His firſt advertiſement was couched in the following high-ſounding terms: "Behold a diſcovery which promiſes "unſpeakable advantages to the human race, and immortal "fame to its author! Behold the dawn of an univerſal "revolution! A new race of men ſhall ariſe, ſhall over-"ſpread the earth, to embelliſh it by their virtues, and "render it fertile by their induſtry. Neither vice, nor "ignorance,

What ſplendid promiſes! what rich proſpects! Meſſmer, the greateſt of philoſophers, the moſt virtuous of men, the phyſician and ſaviour of mankind, charitably opens his arms to all his fellow-mortals, who ſtand in need of comfort and aſſiſtance. No wonder that the cauſe of Magnetiſm, under ſuch a zealous apoſtle, rapidly gained

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" ignorance, ſhall ſtop their active career; they will know " our calamities only from the records of hiſtory. The " prolonged duration of their life will enable them to plan " and accompliſh the moſt laudable undertakings. The " tranquil, the innocent gratifications of that primeval age " will be reſtored, wherein man laboured without toil, " lived without ſorrow, and expired without a groan! Mo- " thers will no longer be ſubject to pain and danger during " their pregnancy and child-birth; their progeny will be " more robuſt and brave; education's now rugged and diffi- " cult path will be rendered ſmooth and eaſy; and here- " ditary complaints and diſeaſes will be for ever baniſhed " from the future auſpicious race. Parents will impart to " them the activity, energy, and graceful limbs and de- " meanour of the primitive world. Fathers rejoicing to " ſee their poſterity of the fourth and fifth generations, will " only drop, like fruit fully ripe, at the extreme point of " age! Animals and plants, no leſs ſuſceptible than man " of the magnetic power, will be exempt from the reproach " of barrenneſs and the ravages of diſtemper. The flocks " in the fields, and the plants in the gardens, will be more " vigorous and nouriſhing, and the trees will bear more " beautiful and luſcious fruits. The human mind, once " endowed with this elementary power, will probably riſe " to ſtill more ſublime and aſtoniſhing effects of nature:— " who indeed is able to pronounce, with certainty, how " far this ſalutary influence may extend?"

ground, and obtained every day large additions to the number of its converts. To the gay, the nervous, and the diſſipated of all ranks and ages, it held out the moſt flattering promiſes. Men of the firſt reſpectability intereſted themſelves in behalf of this new philoſophy; they anticipated, in idea, the more happy and more vigorous race to proceed, as it were by enchantment, from the wonderful impulſive powers of Animal Magnetiſm. Nay, even the French Government was ſo far ſeduced by theſe flattering appearances, as to offer the German Adventurer *thirty thouſand livres* for the communication of his ſecret art. He appears, however, to have underſtood his own intereſt better than thus to diſpoſe of his hypothetical property, which upon a more accurate inveſtigation might be excepted againſt, as conſiſting of unfair articles of purchaſe. He conſequently returned the following anſwer to the credulous French Miniſters:—"That Dr. M. conſidered his art of too great importance, and the abuſes it might lead to, too dangerous for him at preſent to make it public; that he muſt therefore reſerve to himſelf the time of its publication, and mode of introducing it to general uſe and obſervation; that he would firſt take proper meaſures to initiate or prepare the minds of men, by exciting in them a ſuſceptibility of this great power; and that he would then undertake to communicate his ſecret gradually, which he meant to do without hope of reward."

Meſſmer,

Meſſmer, too politic to part with his ſecret for ſo ſmall a premium, had a better proſpect in view; and his apparent diſintereſtedneſs and heſitation ſerved only to ſound an over-curious public; to allure more victims to his deluſive practices; and to retain them more firmly in their implicit belief. Soon after this, we find Meſſmer eaſily prevailed upon to inſtitute a private ſociety, into which none were admitted but ſuch, as bound themſelves by a vow to perpetual ſecrecy. Theſe pupils he agreed to inſtruct in his important myſteries, on condition of each paying him a fee of *one hundred louis*. In the courſe of ſix months, having had not fewer than three hundred ſuch pupils, he realized a fortune of *thirty thouſand louis*. It appears, however, that his diſciples did not long adhere to their engagement: we find them ſeparating gradually from their profeſſor, and eſtabliſhing ſchools for the propagation of his ſyſtem, with a view, no doubt, to reimburſe themſelves for their expences in the acquiſition of the magnetiſing art. But few of them having clearly underſtood the enigmatic terms and myſterious doctrines of their foreign maſter, every new adept exerted himſelf to excel his fellow-labourers, in additional explanations and inventions: others, who did not poſſeſs, or could not ſpare the ſum of one hundred louis, were induſtriouſly employed in attempts to diſcover the ſecret by their own ingenuity; and thus aroſe a great variety of magnetical ſects. At

length, however, Meſſmer's authority became ſuſpected; his pecuniary acquiſitions were now notorious, and our *humane* and *diſintereſted philoſopher* was aſſailed with critical and ſatirical animadverſions from every quarter. The futility of his proceſs for medical purpoſes, as well as the bad conſequences it might produce in a moral point of view, ſoon became topics of common converſation, and at length excited even the apprehenſions of Government. One dangerous effect of the magnetic aſſociations was, that young voluptuaries began to employ this art, to promote their libidinous and deſtructive deſigns.

As ſoon as matters had taken this ſerious turn, the French Government, much to its credit, deputed four reſpectable and unprejudiced men, to whom were afterwards added four others of great learning and abilities, to inquire into, and appreciate the merits of the new diſcovery of animal magnetiſm. Theſe philoſophers, among whom we find the illuſtrious names of Franklin and Lavoiſier, recognized indeed very ſurpriſing and unexpected phenomena in the phyſical ſtate of magnetiſed individuals; but they gave it as their opinion, that the power of imagination, and not animal magnetiſm, had produced theſe effects. Senſible of the ſuperior influence, which the imagination can exert on the human body, when it is effectually wrought upon, they perceived, after a number of experiments and facts frequently repeated, that *Contact*

or

or Touch, *Imagination*, *Imitation*, and *excited Senſibility*, were the real and *ſole* cauſes of thoſe phenomena, which had ſo much confounded the illiterate, the credulous, and the enthuſiaſtic; that this boaſted magnetic element had no real exiſtence in nature; conſequently that Meſſmer himſelf was either an arrant Impoſtor, or a deceived Fanatic.

In the mean time, this magnetiſing buſineſs had made no ſmall progreſs in Germany; a number of periodical and other publications vindicated its claims to public favour and attention; and ſome literary men, who had rendered themſelves juſtly celebrated by their former writings, now appeared as bold and eager champions in ſupport of this myſtical medley. The ingenious LAVATER undertook long journies for the propagation of Magnetiſm and Somnabuliſm *—and what manipulations and other abſurdities were not practiſed on hyſterical young ladies in the city of Bremen? It is further worthy of notice, that an eminent phyſician of that place, in a recent publication, does not ſcruple to rank magnetiſm among medical remedies! Yet it muſt be confeſſed, that

* *Somnabuliſm* is the art of exciting ſleep in perſons under the influence of Animal Magnetiſm, with a view to obtain, or rather extort, during this artificial ſleep, their verbal declarations and directions for curing the diſeaſes of body and mind. Such was the rage for propagating this myſtical nonſenſe, that even the pulpit was occaſionally reſorted to, in order to make—not fair penitents, but fair proſelytes to the ſyſtem.

the great body of the learned, throughout Germany, have endeavoured, by ſtrong and impartial criticiſm, to oppoſe and refute Animal Magnetiſm, conſidered as a medical ſyſtem. And how ſhould it be otherwiſe; ſince it is highly ridiculous to imagine, that violent agitations, ſpaſms, convulſions, &c. which are obviouſly ſymptoms of a diſeaſed ſtate, and which muſt increaſe rather than diminiſh the diſpoſition for nervous diſeaſes, can be the means of improving the conſtitution, and ultimately prolonging human life? Every attentive perſon muſt have obſerved, that too frequent intercourſe between nervous and hypochondriac patients is infectious; and, if this be the caſe, public aſſemblies for exhibiting perſons magnetiſed can neither be ſafe nor proper. It is no ſmall proof of the good ſenſe of the people of this country, that the profeſſors of this fanatical art could not long maintain their ground; that they were ſoon expoſed to public ridicule on the ſtage; and that the few who are ſtill left, are baniſhed to dark alleys and obſcure cellars of the metropolis.

Some other plans for the prolongation of life deſerve to be mentioned, though ſcarcely leſs abſurd than the preceding.

The French Count of ST. GERMAIN made large ſums, by vending an artificial Tea, chiefly compoſed of Yellow-Saunders, Senna-leaves, and Fennel-ſeed; puffing it off by the ſpecious name of *Tea for prolonging life*. It was once ſwallowed

with great avidity all over the continent; but its celebrity was ſhort-lived, and its promiſed beneficial effects were never realized.

Another impudent Adventurer, the *Chevalier* D'AILHOUD, preſented the world with a Powder, which met with ſo large and rapid a ſale, that he was very ſoon enabled to purchaſe a whole *Comté*. Inſtead, however, of adding to the means of ſecuring health and long life, this famous powder is well known to produce conſtant indiſpoſition, and at length to cauſe a moſt miſerable death; being compounded of certain drugs, which are clearly of a poiſonous nature, although ſlow in their operation. And yet there are on the continent, even to this day, ſeveral reſpectable families who perſiſt in the uſe of this deleterious powder, from an ill-judged partiality for its inventor.

COUNT CAGLIOSTRO, that luminary of modern Impoſtors and Debauchees, prepared a very common ſtomachic Elixir, which he ſold at an enormous price, by the name of "*Balm of Life*;" pretending, with unparalleled aſſurance, that by the uſe of this medicine he had attained an age exceeding 200 years, and that he was thereby rendered invulnerable to all attempts by poiſon. Theſe bold aſſertions could not fail to excite very general attention. During his reſidence at Straſburg, while he was deſcanting, in a large and reſpectable company, on the virtues of his antidote, his pride was mortified by a ſevere check. A Phyſician who

was preſent, and had taken part in the converſation, quitting the room privately, went to an Apothecary's ſhop, where having ordered two pills to be made of an equal ſize, and agreeably to his directions, he ſuddenly appeared again before Caglioſtro, and addreſſed him as follows: "Here, my "worthy Count, are two pills; the one contains a "mortal poiſon; the other is perfectly innocent; "chooſe one of theſe, and ſwallow it, and I en-"gage to take that which you leave. This will "be conſidered as a deciſive proof of your me-"dical ſkill, and enable the public to aſcertain "the efficacy of your extolled Elixir." Caglioſtro took the alarm, made a number of apologies, but could not be prevailed upon to touch the pills. His opponent ſwallowed both immediately, and proved by his Apothecary, that they might be taken with the moſt perfect ſafety, being only made of common bread. Notwithſtanding the ſhame of this detection, Caglioſtro ſtill retained numerous advocates and partiſans, by circulating eccentric notions, and concealing his real character by a variety of tricks.

The inſpired FATHER GASSNER, of Bavaria, aſcribed all diſeaſes, lameneſs, palſy, &c. to diabolical agency, contending from the hiſtory of Job, Saul, &c. recorded in Sacred Writ, that Satan, as the grand enemy of mankind, has a power to embitter and ſhorten our lives by diſeaſes. Vaſt numbers of credulous people flocked to this fanatic, for the purpoſe

purpoſe of obtaining relief. Whole cargoes of patients, afflicted with nervous and hypochondriac complaints, beſieged him as it were in his quarters every day;—all ſtimulated and heated with a wild imagination, all eager to view and to acknowledge the works of Satan! Men of literary character, even the Natural Philoſophers of Bavaria, were hurried away by the ſtream, and completely blinded by this ſanctimonious Impoſtor.

It is no leſs aſtoniſhing than true, that in the year 1794, a COUNT THUN, at Leipzig, pretended to perform miraculous cures on gouty, hypochondriac, and hyſterical patients, merely by the impoſition of his ſacred hands. He could not, however, raiſe many diſciples in a place, that abounds with Sceptics and Unbelievers.

It would be treſpaſſing too much on the limits I have propoſed to myſelf, were I to enumerate the various remedies advertiſed in the daily papers, both Britiſh and Foreign, under the fictitious and fraudulent pretence of prolonging life. I ſhall therefore only remark, in general, that all theſe celebrated ſpecifics are obviouſly compoſed upon wrong principles; inaſmuch as their inventors proceed on the hypothetical idea, that *diſeaſe is the only cauſe of ſhortening life*; and, being thus miſtaken, it is no wonder that they carry the *ſtrengthening* or *bracing* ſyſtem to an extravagant degree.

The higheſt point of bodily vigour and health may of itſelf contribute to ſhorten life; although

no external cauſes ſhould appear as co-operating to haſten the conſumptive proceſs. Nay, the very remedies we uſe, and the regimen we attend to, for the prevention or cure of diſeaſes, may be of ſuch a nature as to promote that conſumption.

Abſurdity of Specific Remedies.

From the doctrines now laid before the reader, I hope I ſhall not be thought unreaſonable, in drawing this concluſion:—That the plans for prolonging human life are generally erroneous and injudicious; that all *artificial* means have rather a tendency to ſhorten than to prolong it; and that we can never ſafely expect the accompliſhment of this great object, unleſs we purſue methods more conſonant to nature, more verified by experience.

The truth of this inference will be more evident, when we come to inquire into the *conditions*, which are eſſentially requiſite to the attainment of a long life.

The *firſt* of theſe, is a certain bodily and mental diſpoſition to longevity, not eaſily defined, yet ſufficiently known and underſtood. In whatever this diſpoſition may conſiſt, it is matter of aſtoniſhment, and inexplicable by the laws of animal œconomy, that many individuals, frequently under the moſt unfavourable circumſtances, and in the moſt unwholeſome

wholeſome climates, have attained to a great and happy age. It may indeed be confidently affirmed, that, without this principal requiſite, all other advantages are often of no avail;—the moſt ſalubrious country-air, a diſtrict abounding with aged inhabitants, a rigid adherence to the diet of Cornaro, a regular courſe of exerciſe and recreations, with the beſt art of the phyſician, are not alone ſufficient to inſure the felicitous proſpect of a long and healthy life *.

Secondly: It is certain that there is, in moſt caſes, a ſort of hereditary diſpoſition to longevity; an innate principle, or quality, which, like many family diſeaſes, is propagated from one generation to another. Perhaps nine out of ten old perſons could make it appear, that their parents and anceſtors alſo lived to a great age; a reaſon which

* If theſe rational means be unavailing to inſure longevity, ſtill more ſo are thoſe miraculous remedies introduced by ſuperſtition. The Ancients conceived the idea of a *principle of life*, which they compared to a radical fluid;—the Alchemiſts expected to find this *original entity* in *gold*, by the uſe of which they pretended that the human body might acquire the ſolidity and durability of that metal. Others traced the germ of life in bodies of conſiderable duration; in plants and animals; in the wood of the Cedar, and in the fleſh of the Stag.—Boerhaave has made a facetious remark upon the ſubject: "This notion," ſays he, "is juſt as ridiculous as "that of the man, who, in order to prepare himſelf for "the buſineſs of a running footman, is ſaid to have lived "for ſome time entirely on the fleſh of hares; hoping thus "to ſurpaſs all his fellows in agility."

may

may be admitted without having recourſe to any material ſubſtance, as the cauſe or effect of this inherent virtue.

The *third* requiſite to longevity is a *perfect birth* of the child, and a proper ſubſequent conduct in the mother;—upon which ſubject it is not my intention to expatiate in this place. That acute phyſiologiſt, LORD BACON, ſomewhere remarks, "that children partake more of the nature of the "mother, the longer time ſhe has nurſed them; "and that thoſe children which moſt reſemble the "mother, will be generally found to have a claim "to longevity."

Fourthly: A gradual, and not too precipitate culture of the phyſical and mental faculties may be properly conſidered as an excellent preliminary ſtep towards prolonging life. The age of man bears a certain proportion to the growth of his various powers; and the longer we can protract the different ſtages of life, the more extended will be the whole compaſs of our exiſtence. As it is evidently the deſign of nature, that man ſhould live longer than moſt of the lower animals, he of courſe requires a greater ſpace of time, to develope the faculties both of mind and body. Animals, which arrive ſoon at the perfection of their nature and form, live but a ſhort time. Man requires upwards of twenty, and according to ſome, twenty-five years, before he attains to full maturity; and if it be a rule of nature, that animals in general

neral live eight times the number of years, which is requiſite to the attainment of their perfect growth, a ſtrong preſumption ariſes, that the age of man might be extended to nearly two hundred years. In the works of the illuſtrious Bacon, and particularly in his "Hiſtorical View of Life and Death," are given many ſtrong arguments to confirm this aſſertion. Surpriſing as it may appear to ſome, there is a poſſibility at leaſt, if not a probability, that the term of human life might be ſtill further extended, if mankind could by any means be perſuaded to return to that primeval ſtate of nature, from which hiſtory and tradition have furniſhed us with ſuch aſtoniſhing and almoſt incredible inſtances of longevity. It is not my intention here to inquire into the degree of credit, which may be due to the accounts of ſome extraordinary facts of individual longevity recorded by the ſacred hiſtorian; as the learned vary much in their opinion, relative to the mode of computation, and whether the Solar, the Arabic, or the Lunar year, or a ſtill ſhorter meaſure of time, is alluded to. This, at leaſt, ſeems to be generally admitted, that the antediluvians enjoyed an enviable, uninterrupted ſtate of health; that their vegetable aliment, and general mode of living, were extremely ſimple and nowiſe prejudicial; that the conſtitution and temperature of the globe itſelf muſt have been greatly affected and deteriorated, in conſequence of the Flood, or other cauſes of which we are ignorant; and, laſtly,

that

that thoſe impetuous and inordinate appetites and paſſions, which, like flames, may now be ſaid to conſume the powers of life, were then either leſs violent, or exerted their baneful influence at a much later period of life.

Nature reſents every outrage committed on her treaſures, and ſeldom fails to puniſh the tranſgreſſors with lingering diſeaſe, or early diſſolution. This obſervation may be applied to the moral as well as the phyſical faculties of man. It is commonly ſaid, and not without ſome degree of truth, that very forward children ſeldom live to any age; and that too early an exertion of mental powers is in moſt caſes deſtructive. The ſame remark holds good in what relates to the body. The inhabitants of hot climates, who frequently marry at the age of ten and twelve, or twelve and fourteen, begin to be old at thirty, and rarely ſurvive the ſixtieth year. Every thing which haſtens the evolution of the natural powers, every exertion of ſtrength diſproportionate to the ability of the individual, ſhould be carefully avoided, as of a dangerous tendency. Hence the great art of education, the great art of living, conſiſts in following the path of nature.

Fifthly: We ſhould conſtantly inure ourſelves to the habits of ſupporting and reſiſting the various impreſſions of external agency.—Some perſons, who have paid a very rigid attention to diet, have notwithſtanding been unable to reach even a middling

middling age; while others, who have been addicted to the moſt irregular and extravagant courſes, have been obſerved to live to one very advanced. Hence ariſe contradictory maxims in dietetics, which can only be reconciled by deciding chemically between the two extremes, and aſcertaining pretty nearly the abſolute and relative ſalubrity of things. All deviations from the rules of diet are in a certain degree hurtful; although theſe may, in moſt caſes, have only a limited value. Many epicures have been known to reach their ſeventieth and eightieth year, if they have once ſurvived a certain critical period of their lives*. As ſoon as the body becomes accuſtomed to the uſe of certain things, at firſt diſagreeable and perhaps hurtful, the noxious tendency will not only be removed, but we ſhall find our frame hardened

* Experience ſhows, that there is a particular term of life which, if we can paſs in the fulneſs of health and vigour, leaves the greateſt probability of living to a conſiderable age. In the female ſex, this period generally arrives at, or before, the fiftieth year; in the male, it is about the ſixtieth year. Gellius, a medical author of credit, aſſerts, from obſervations founded on long experience, that the ſixty-third year is, to moſt conſtitutions, a critical and dangerous one. The Egyptians called this epocha *Androclos*, becauſe man begins from that time to experience a rapid decay of ſtrength and energy. Others, rather more ſuperſtitiouſly, maintained that, about this period, many individuals die, or at leaſt are ſubject to ſevere attacks of diſeaſe.—The Emperor Augustus received the congratulations of his friends, on having ſurvived this trying period.

and

and ſtrengthened by the habit of uſing them. Nature muſt ſtand many a ſhock, if ſhe would familiarize herſelf to the viciſſitudes of climate and oppoſite modes of life, but every victory ſhe gains in theſe encounters, will be a means of rendering her more vigorous and unconquerable.—How could the ſublime mind of FREDERIC THE GREAT have remained ſo long in its earthly vehicle, if he had not improved, by conſtant culture and diſcipline, his original diſpoſition to a long life? A thouſand other men, who have endured as much exerciſe of body and exertion of mind in their younger years, have yet not attained to any remarkable age.—Severe and obſtinate diſeaſes have alſo been thought, in many inſtances, to contribute to the prolongation of life: this is at beſt, however, but a doubtful point; although it cannot be denied, that many ſick perſons have, to all appearance, acquired additional ſtrength and ſpirits, after having recovered from a diſtreſſing quartan ague, or ſome threatening pulmonary diſorder.

Sixthly: We may take notice of a certain *ſteady and equal progreſs through life*, as highly conducive to the great object in view, whether it flows in the manner of a gentle ſtream, or reſembles the more active courſe of a rapid river. The mind, when accuſtomed to certain ſituations and purſuits, which almoſt conſtantly affect it in an uniform manner, is moſt likely to preſerve its reaſoning powers unimpaired

paired and ſtrong. He whom neither violent joy convulſes, nor deep melancholy corrodes, whoſe drama of life is not checquered by too ſudden viciſſitudes, may, with ſome probability, expect a long enjoyment of that life, to which he has become ſo habituated.—There are many whoſe days quietly glide away, like thoſe of a ſimple ruſtic, in continual ſameneſs: ſuch perſons, it is obſerved, generally live to a great age.

Seventhly: A very neceſſary cauſe of the attainment of an advanced age, is a ſound ſtate of digeſtion. In very old perſons, we generally find the digeſtive organs in excellent condition; nor is there a ſurer ſymptom of approaching diſſolution, than complaints in the ſtomach, or frequent returns of indigeſtion. The Swiſs are indebted, it is thought, to the vigorous tone of their digeſtive powers, for the long preſervation of their lives, in general, and for the great number of aged perſons among them. Milk and vegetable food ſeem remarkably well adapted to invigorate the ſtomach. To effect the ſame purpoſe, LORD BACON adviſes old people to have recourſe to ſtrengthening baths, fomentations, and ſimilar *external* remedies, which operate upon the abſorbent ſyſtem. At the ſame time, a thin but nouriſhing and moderate diet ſhould be obſerved, in order to ſpare the organs of digeſtion.

Eighthly, and laſtly: We may recommend equanimity, or that ſtate of the mind, when, from the

happy nature of its purſuits, it is not diſquieted by too violent exertions. In the literary profeſſions, and particularly among ſuch individuals as are placed in eaſy circumſtances, we diſcover as many inſtances of longevity, as in the more laborious occupations. It was remarked by the Ancients, that grammarians and rhetoricians commonly attained a great age. The mind being engaged in ſcientific purſuits, and other objects in which it finds pleaſure, ſuch as converſation on literary and mixed topics, collecting the productions of nature, a continual ſeries of mental reſearch, diverſifying the purſuits or amuſements, yet gradually and conſtantly perſevering in exertions towards the attainment of ſome principal object—all ſupply the vital power, as it were, with materials, like the cruſe of oil, which proved a never-failing ſupport to the widow of *Sarepta*. On the other hand, it is a general remark, that deep thinkers, ſpeculative philoſophers, and thoſe whoſe powers are continually abſorbed in abſtruſe inquiry, ſoon feel the effects of age, from the great exertions of their mental powers. This muſt be underſtood, however, with exceptions, as in the caſes of SIR ISAAC NEWTON, HALLER, EULER, and the pride of his nation and age, the profound and venerable KANT, ſtill living at Koenigſberg.

I venture to ſay thus much on the various rules and precautions requiſite to attain a long and healthful

ful life. Some of the particulars are, no doubt, found united in a certain proportion of the individuals, who arrive at a reſpectable age. It is commonly remarked alſo, that the inhabitants of mountainous countries, for the moſt part, live to a greater age than thoſe of plain and, particularly, marſhy diſtricts. This is in part true; yet we are not to conſider the lofty regions in the Alps and Pyrenees as poſſeſſing theſe ſalubrious qualities; for it is only upon moderate heights, and in hilly rather than mountainous countries, that we ſo frequently meet with people of an unuſual age. Perſons, who are conſtantly travelling, are likewiſe ſaid to enjoy a long and healthful life; and Lord Bacon further includes, in the liſt of long livers, ſuch as are of a melancholy temperament. It is a queſtionable point, whether the great age of many Turks is to be aſcribed to the ſerenity of their climate, their daily uſe of the bath, or their uncommon temperance in eating and drinking. For, as to their copious uſe of opium, which is conſidered by them almoſt as neceſſary as food, we have already ſhown the noxious tendency of ſuch practice; opium generating, in a remarkable degree, a diſpoſition of the fluids, in many reſpects reſembling that of hypochondriaſis. There is ſcarcely an inſtance of any perſon, that has attained to uncommon longevity, who has not been particular in his diet and manner of living. But in this reſpect we cannot hope to derive

advantage from exceſſive ſolicitude:—for, as when in want of ſleep, the more we think of it, the more it ſhuns us; ſo thoſe who are moſt anxious for longevity, are the leaſt likely to attain it. Age is a gift, which Heaven frequently beſtows upon mortals, when they are aſleep, or in other words, when they are ſcarcely ſenſible of it!

On the Symptoms of actual Diſſolution.

THAT many unfortunate individuals are conſigned to the grave, before they are actually dead, is a truth too well atteſted to require demonſtration. If this were not, or never had been the caſe, it could not have excited that degree of attention on the Continent, and particularly in Germany, which of late years has been beſtowed on this important ſubject. The moſt reſpectable Phyſicians have proved by incontrovertible facts, that ſick perſons have often been haſtily buried, or to ſpeak more properly, ſmothered in their coffins, either from accidental miſtake, or from the moſt deteſtable motives. But, as many falſe and ſcandalous reports are generally circulated, in addition to thoſe founded on truth, we need not wonder, that this buſineſs has not been conducted, hitherto, with that degree of calm and patient attention, to which it is juſtly entitled. Houſes for the reception of perſons apparently dead have been, at length, erected in various

various parts of Germany, in Berlin, Jena, Coburg, &c. This idea, at the firſt view of it, may to ſome appear whimſical; but thoſe who know the extent of the power of vitality, and the almoſt infinite modifications of which that power is ſuſceptible, will not ridicule a propoſal, which originated in motives of prudence and humanity. Into theſe houſes every inhabitant of the town, or diſtrict, has a right to ſend the body of a deceaſed perſon, on paying a trifling ſum per night, towards the expences of the inſtitution. Here the body is depoſited on a couch, lightly covered, and provided with a ſtring faſtened to the hand, which pulls a bell on the top of the houſe. A watchman is appointed to receive and regiſter the bodies brought into the houſe, and to give the alarm, if neceſſary. This, to ſay the leaſt of it, is no ſmall convenience to families in a large city, crowded into narrow apartments, with a number of children, who muſt neceſſarily ſuffer from the peſtiferous exhalations of dead bodies. But this is not the principal advantage attending ſuch eſtabliſhments: it is unqueſtionably a great ſatisfaction to the relatives of the deceaſed, to be aſſured that every means have been uſed to preſerve from the moſt dreadful of all deaths, a friend whoſe memory they revere.

The caſes, in which death can be clearly aſcertained, are nearly the following:

1. When putrefaction has actually taken place over the whole animal frame; as inſtances are common, in which a partial mortification of an arm or a leg is by no means mortal.

2. In the nervous apoplexy of the aged; as ſuch perſons generally die in conſequence of ſlowly waſting diſorders, various ſpecies of palſy, &c.

3. If the patient expires after a long ſtanding conſumption, hectic fever, or ulcerations of the breaſt and lungs, diſeaſes now very common.

4. If any of the larger blood-veſſels, or other parts eſſential to life, have received external injury, by violent blows, bruiſes, or cuts, attended with great loſs of blood, which could not be ſtopped by artificial means. If we are unable to ſupply the loſs of this vital fluid, and to reſtore the organization of the parts thus deſtroyed; particularly if the brain, the lungs, the heart, the ſtomach, or any of the inteſtines, have ſuffered from a ſevere wound, a ſpeedy diſſolution may be conſidered as inevitable.

5. After chronic diſorders of the inteſtines, obſtructions of the abdominal veſſels, and dropſy thence ariſing—or if an incurable weakneſs in the breaſt has occaſioned the organic deſtruction, or oſſification of the pectoral veſſels, there is little proſpect of the recovery of ſuch a perſon; as theſe complaints of aſthmatic ſufferers, in general, are not in a juſt proportion to the whole ſtate of the body;

body; for inſtance, if their appetite and digeſtion have been unimpaired previous to their diſeaſe, or if their muſcular ſtrength has not ſuffered from the like affections.

6. In perſons of tender and debilitated nerves, who have been long ſubject to ſpaſms or epileptic fits, particularly if they die in child-bed, in conſequence of violent hemorrhages, or after repeated and oppreſſive agitations of mind;—in ſuch caſes there is no hope left, as it is too late to think of changing or improving the conſtitution of the nervous ſyſtem. Laſtly,

7. If a perſon gradually waſtes away in a malignant nervous or putrid fever, or after long faſting from want of food. In theſe inſtances it is not in the power of the medical art to reſtore the ſhrivelled veſſels to their proper tenſion and energy; conſequently all our efforts to reanimate the body will be unavailing.

There remains now to be ſtated alſo, in what caſes and ſituations the ſymptoms of apparent death are leſs certain, ſo that ſome hope of recovery is ſtill left to the diſconſolate friend and relative. Theſe are principally the following: after faintings, ſudden loſs of blood from diſeaſed inteſtines,—in certain caſes of repelled morbid matter, for inſtance, in the ſmall-pox, meaſles, poiſons, and the like, which frequently produce a ſpurious kind of apoplexy;—after hyſteric and hypochondriac ſpaſms and colics of a tranſitory kind, which have not too

often recurred; after mental anxiety, perturbation, terror, and other oppreſſive paſſions, where every thing depends on a ſpeedy removal of the cauſes. To this liſt we may likewiſe add the caſes of drowned, hanged, and otherwiſe ſuffocated perſons, or thoſe who appear to be dead, in conſequence of a fall from high ſcaffoldings, without any external injury. In ſuch accidents, an internal preſſure or ſtoppage of the vital functions, as breathing, and circulation of the blood, often produces a ſtate of apparent death.—Even the ſuppreſſed pulſe in the arteries, imperceptible reſpiration, the coldneſs and rigidity of the limbs, the want of contractibility in the pupil of the eye, the involuntary loſs of excrementitious ſubſtances,—all theſe ſymptoms of approaching diſſolution ſhould not diſcourage us from trying the proper means of recovering the patient's life. In children and young perſons, in particular, we muſt not too haſtily decide, whether they be abſolutely dead or not;—*teething* is frequently attended with diverſified convulſive ſymptoms, and the *tape-worm* is capable of producing the moſt alarming effects, which the inexperienced by-ſtanders may unwarily aſcribe to very different cauſes. Hence every poſſible degree of precaution is requiſite in managing the bodies of infants apparently dead, and above all things not to remove them from the warm temperature of the ſick-room, before the laſt lingering ſpark of life is extinguiſhed. Indeed, it muſt ſtrike even ſuperficial

ficial obſervers, that the haſty removal of a body from a warm to a colder temperature is highly improper and dangerous. And here the excellent rules, publiſhed by the Royal Humane Society of London, for the recovery of perſons apparently dead, cannot be recommended in too ſtrong terms; although ſome of the more violent methods detailed in their plan, ſuch as inflation of the bowels with the *fumes* of *tobacco*, *clyſters* prepared of this herb, violent *agitation*, and too *early* and *indiſcriminate* application of the *electric ſhock*, might well bear a few modifications and improvements.

Summary of Dietetics.

THE knowledge of thoſe objects which relate to the preſervation of the human body, in its natural ſtate, may be called the *Doctrine of Health*. Life and Health are, therefore, the proper objects of this doctrine; as the ſecond department of Medicine ſolely relates to the preternatural ſtates of man, viz. Diſeaſe and Death, and forms that branch of profeſſional ſtudy, which we call '*Pathology*.'

The compaſs of the former ſcience, or an inveſtigation of the objects included in the doctrine of health, muſt be very extenſive. It furniſhes us with rules and cautions as to every thing we ought to do, or to avoid, in order to remain healthy. This uſeful ſcience is properly denominated DIETETICS, or a *ſyſtematic view of all objects relative*

to health in general, and to food and drink in particular.

The following Chapters will, therefore, be exclusively devoted to Dietetics. My principal object will be, to lay a ſolid foundation for that important ſcience, by inveſtigating and combating the chief prejudices, which have hitherto retarded the progreſs of this branch of knowledge. Hence, a *Syſtem of Dietetics* muſt not only contain all thoſe rules, which are requiſite to guide us in the preſervation of health, together with ſuch as relate to the choice of a proper mode of life, but ſhould likewiſe inform us with regard to the beneficial or hurtful influence, which *external objects* produce on the health and life of man, and teach us the juſt application, or practical uſe, of theſe objects.

DIETETICS include the whole of what the Ancients underſtood by the ſingular name of the SIX NON-NATURALS; namely, *Air*, *Aliment*, *Exerciſe and Reſt*, *the Paſſions and Affections of the Mind*, *Wakefulneſs and Sleep*, and *Repletion and Evacuation*. Although theſe general heads do not compriſe, ſtrictly ſpeaking, every thing that relates to the different functions of the human body; yet they contain all ſuch conditions of life, as are abſolutely neceſſary, and the greateſt part of thoſe circumſtances, which are connected with the health and well-being of the individual. In each of theſe particulars we are liable to commit errors, either by intemperate uſe, or an improper applica-

tion,

tion. I propoſe, therefore, to lay down a Syſtem of Rules, by which we may be aſſiſted to chooſe, according to particular circumſtances, the beſt and moſt rational means of inſuring health, and of avoiding whatever may have a contrary tendency.

Our mode of life is no longer that natural and ſimple one, which prevailed in the primitive ages of mankind: in the preſent ſtate of ſociety ſuch habits are ſcarcely conceivable. Man in a ſtate of nature had little occaſion to attend to his health; he wanted no rules for the preſervation of it; for, as the ſeeds of diſeaſes are rarely ſcattered in ſuch a ſtate, inſtinct would be to him in moſt caſes a ſufficient guide. It now ſeems to be impoſſible to return to that primeval ſtate, without returning, at the ſame time, from our preſent degree of mental improvement to that of priſtine barbarity. We have, to all appearance, purchaſed our improved ſtate of mental culture, by ſacrificing to it a conſiderable ſhare of our bodily welfare;—happy, however, we may ſtill conſider ourſelves, if we have actually gained in moral and intellectual improvement.

Innumerable are the cauſes, which have conſpired to render the *true* knowledge of the means conducive to health, difficult in the acquiſition, and uncertain in its application. The chief of theſe are probably the following, which include moſt of the ſubordinate particulars:—the preſent

very

very artificial method of living; the prodigious number of the employments of mankind; the different modes of dwelling and dreſſing; the endleſs variety of articles uſed as food and drink; the great diverſity of national cuſtoms and manners; and the difference of climate and ſituation:—all theſe circumſtances have greater or leſs influence, conjointly or ſeparately, not only on the paſſions, inclinations, and inſtinctive deſires of individuals, but alſo on the general ſtate of the health and phyſical welfare of a people. By the preſent mode of living we are expoſed to diſeaſes wholly unknown in the firſt ages of the world, and we ſuffer from a variety of complaints, originating either in artificial habits, or the conſtraint under which we labour, in conſequence of blindly complying with the caprices of cuſtom, or faſhion, without perhaps apprehending any ill conſequences from ſuch pernicious practices.

Many ingenious writers have lately endeavoured to point out the diſadvantages ariſing from cauſes apparently trivial. Thus the faſhion of uſing paint, hair-powder, and pomatum; of wearing ill-ſhaped ſhoes, laced ſtays, &c. have deſervedly incurred ſevere ridicule and pointed cenſure. The cuſtom of applying lead to earthen veſſels has not eſcaped their attention: the danger, however, reſulting from the uſe of that ſubſtance, has been greatly exaggerated. Writers, with the beſt intentions, have ſometimes, from an exceſs of zeal, deſcanted

on the worſt ſide of the queſtion only, by attributing to certain things many dangerous qualities, which in fact are owing to a great diverſity of circumſtances.

This partial method of inquiring into the ſources of the evil, is, generally ſpeaking, a ſerious error; as it not only leads to falſe concluſions, but alſo draws our attention from other preſſing injuries, to which, in a more diſpaſſionate ſtate of mind, our care might be directed.

Many, and perhaps the greater number, of dietetic writers have fallen into another error of an equally bad tendency. They judge of every thing, according to the agreeable or diſagreeable effect it produces on their own palates and conſtitutions, and hence recommend their favourite articles to others; although what is ſalutary in particular caſes, may have a pernicious tendency, if preſcribed indiſcriminately.

The multiplicity of our wants, all deſerving attention in a Dietetic Syſtem, has alſo conſiderably multiplied the rules of health. Of all living beings, indeed, none require ſuch rules more than thoſe, who ſervilely ſubmit to the arbitrary mandates of luxury and faſhion.

Many are the open and ſecret enemies to the health and proſperity of man. Even the moſt healthy, and thoſe who rigidly adhere to the rules of Diet and Regimen, cannot altogether evade

their attacks. Hence we ſhould make it our ſtudy, to acquaint ourſelves minutely with every thing, ſo as to be enabled to judge of its good or bad qualities. Whatever we are obliged to have more immediately about and around us, ranks in this claſs: the arrangement of our dwelling places, beds, clothes, furniture, &c.; in the choice of which we are leſs accuſtomed to conſult what nature requires, or to contrive what may be moſt likely to promote the welfare of the body, than to follow faſhion, vanity, or our own habits.

Some of our organs of ſenſe, and other faculties of the body, muſt unavoidably ſuffer from inattention to a proper mode of living in general. From the great exertions, to which we often ſubject them (the eyes, for inſtance, in reading) they are liable to a variety of accidents, and frequently become debilitated and impaired. It appears, therefore, perfectly conſiſtent with the plan of this work, to treat of the management of the eyes, teeth, and other individual parts of the body.

In a complete Syſtem of Rules for preſerving the health of man, attention muſt be paid to the ſeparate wants of individual conſtitutions; provided they be not too minute and trivial. Such a Syſtem muſt contain more than what relates to the firſt and moſt ſimple rules of living;—its precepts muſt not apply to the healthy alone, or

thoſe

thoſe whoſe life is regulated by the ſimplicity of nature,—it ſhould alſo lay down inſtructions, how, in all contingent circumſtances, we may be ſecured from danger and bodily injuries. It is not, however, propoſed to treat of diſeaſes after they have taken place, if the removal of them requires any thing more than a ſtrict adherence to temperance, and the other rules laid down in theſe Lectures.—But to prevent any miſapplication of thoſe rules which are eſtabliſhed by the accumulated obſervations of ages, it may not be improper to introduce here ſome previous *general remarks*, relative to the individual uſe and advantage to be derived from a connected view of *Dietetics*.

It may be laid down as a preliminary obſervation, that the rules contained in this work are not to be conſidered as ſtrictly applicable, in every inſtance, to the particular ſituation of any individual, or as eſſentially neceſſary to the preſervation of his health. It is not ſo much the healthy, as the valetudinary and infirm, who ſtand in need of minute precepts for their conduct; and even the latter ought not to engage too ſolicitouſly in their compliance with them; ſince it is only a very limited number, that require ſuch accurate attention.

A vigorous and perſevering method of inuring ourſelves to the unavoidable difficulties and diverſified

verified accidents of life, is of greater importance to the preſervation of health, than any dietetical rules whatever. Man is capable of undergoing all the viciſſitudes and inconveniences of air, weather, and climate; he can digeſt any articles of food, if his ſtomach has not been wantonly indulged; he can ſuſtain the ſevereſt bodily exerciſe and labour, without paying too minute attention to time or regularity, when his employment or duty renders exertion neceſſary. But he who from his infancy has been treated with extreme tenderneſs, or who, after having been previouſly accuſtomed to a hardy mode of life, is ſeized with the whim of beſtowing too much care on his health, will ſuffer from the moſt trivial hardſhips, and catch cold at every change of the air; every heavy or high-ſeaſoned diſh will be oppreſſive, and the ſmalleſt deviation from the rules of temperance indiſpoſe him. Yet, by the ſame rules, every healthy perſon will learn, that the grand ſecret for preſerving himſelf in that ſtate, conſiſts principally in the art of moderating his deſires and enjoyments. We may thus arrive at the knowledge of ſuch things, as are *generally* conducive to the welfare of the body; and more than this ought not to be expected. Rules of health, *univerſally* applicable to the ſtate of every individual, are not diſcoverable in nature; nor can they be derived from any experimental knowledge

ledge we poſſeſs of corporeal objects.—The beſt general precept is, that every one ſtudy himſelf, and his own particular conſtitution; that he chooſe and regulate his mode of life accordingly; and that he make his own experience his guide in whatever he finds moſt ſuitable and convenient.

CHAP. II.

Of AIR *and* WEATHER; *their influence on the Human Body; the means of improving the former, and diminiſhing the pernicious effects of the latter.*

Of Air in general.

As ſoon as an infant enters into the world, the air of the atmoſphere penetrates into his lungs, filled up till then with aqueous mucus, and renders them fit for the circulation of the blood, which immediately commences. From that moment the alternate extenſion and contraction of the breaſt and lungs, the inſpiration and expiration of the air, or in other words, the function of *reſpiration*, becomes indiſpenſably neceſſary to the preſervation of animal life. While the child remained within its mother, it required no external air. As ſoon, however, as it has drawn breath, as ſoon as the lungs are opened, the act of reſpiration begins, is conſtantly renewed through life, and can never abſolutely ceaſe, but with death. As, therefore, air is the principal medium, by which animal life is ſupported, it becomes highly important to acquire correct ideas of this refined ſubſtance, that pervades all the parts of animate and inanimate

matter, and is ſo eſſential to man, for the preſervation of both his life and health.

Air is that colourleſs, tranſparent, compreſſible, heavy, and elaſtic fluid, which every where ſurrounds our globe, and which generally receives the name of *Atmoſphere* *. This ambient matter, in its

* "Our bodies are equally preſſed upon by the incumbent atmoſphere, and the weight they ſuſtain is equal to a cylinder of the *air*, whoſe baſe is equal to the ſuperficies of our bodies.—Every foot ſquare of this ſuperficies ſuſtains a quantity of *air* equal to 2660 lb.; ſo that if the ſuperficies of a man's body was to contain 15 ſquare feet, which is pretty near the truth, he would ſuſtain a weight equal to 39,900 lb. The difference of the weight of the air, which our bodies ſuſtain at one time more than at another, is alſo very great; that between the greateſt and the leaſt preſſure of air upon our bodies has been proved to be equal to 3902 lb. Hence it is ſo far from being a wonder, that we ſometimes ſuffer in our health by a change of weather, that it is the greateſt miracle we do not always do ſo. For when we conſider, that our bodies are ſometimes preſſed upon by near a ton and a half weight more than at another, and that this variation is often very ſudden, it is ſurpriſing that every ſuch change ſhould not entirely break the frame of our bodies to pieces. And the veſſels of our bodies, being ſo much ſtrained by an increaſed preſſure, would ſtagnate the blood up to the very heart, and the circulation would quite ceaſe, if Nature had not wiſely contrived, that when the reſiſtance to the circulating blood is greateſt, the *impetus*, by which the heart contracts, ſhould be ſo too. For upon increaſe of the weight of the air, the lungs will be more forcibly expanded, and thereby the blood more intimately broken and divided; ſo that it becomes fitter for the more fluid ſecretions, ſuch as that of the (ſuppoſed) nervous

its common ſtate, is combined with a great variety of foreign ingredients. It contains *water* in a ſtate of ſolution; by means of water it combines with ſalts; in many places we find it impregnated with *ſulphur*, with putrid exhalations, and the like; nay, frequently we even meet with earthy particles floating in this element.—When all foreign ingredients are ſeparated from it, the ſubtile aërial body ſtill remains of a compound nature, and is by no means a ſimple elementary ſubſtance, as was formerly believed.

According to the late diſcoveries in chemiſtry, the aërial baſis of the atmoſphere conſiſts of *three* different ſpecies of air, namely of pure, reſpirable, or dephlogiſticated air; of azotic, or phlogiſticated air; and of fixed, aërial, or carbonic acid air.—The proportion of the firſt, namely, pure or vital air, conſiſts, according to the French Chemiſts, who have given it the name of *Oxygen*, of 27 or 28 in the hundred parts; the ſecond, *viz.* the *Azote* of the French, of 72 or 73 in he hundred;

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fluid, by which the heart will be more ſtrongly contracted, and the blood's motion towards the ſurface of the body being obſtructed, it will paſs in greater quantity to the brain, where the preſſure of the air is taken off by the *cranium*, upon which account alſo more ſpirits will be ſeparated, and thus the heart too more enabled to carry on the circulation through all paſſable canals, while ſome others towards the ſurface are obſtructed."

Quincy's New Medic. Dict. – Article, *Air.*

and

and the third, namely the *Carbonic acid air*, of about one part only in the hundred*.

Oxygen

* The accurate experiments made by the late SCHEELE and BERGMAN, in Sweden, do not much differ from those of the French Chemists, with respect to these proportions. For, according to Scheele and Bergman, the common proportion of vital air, or oxygen, in the atmosphere, is about $\frac{1}{4}$; that of azote about $\frac{3}{4}$; and that of carbonic acid nearly $\frac{1}{128}$; the last of which, by the French, is computed only at $\frac{1}{100}$ part, that is, five parts in the hundred less than the Swedish philosophers maintain.

The following is a concise history of *Oxygen*:—In August, 1774, Dr. PRIESTLEY, and much about the same time Mr. SCHEELE, in Sweden, discovered this respirable part of atmospheric air, or rather they exhibited it, for the first time, in a pure state. This elastic substance was first called *dephlogisticated air*, agreeably to the hypothesis of *phlogiston*;—afterwards it went under different names, as pure air, fire-air, vital air, until the late hypothesis of *Oxygen*, or the acidifying principle, has procured it the name of *oxygen gas*. —But still more diversified than these names, are the theories which have been proposed on the nature and properties of this species of air, during the last twenty years. With *Priestley*, it is the purest air freed of all phlogiston; with *Scheele*, it is the nitrous acid deprived of its water; according to *Bergman*, it is one of the unknown constituents of nitrous acid; with *Fontana*, it is the dephlogisticated nitrous acid; *Forster* considers it as air united with fire; Mr. *Watt*, of Birmingham, thinks to find in it elementary fire combined with hydrogen or inflammable gas; *Achard* and *Gren* formerly believed it to be water combined with much Caloric, or the principle of Heat; but *Gren* latterly maintained, in his System of Chemistry, that it is the unknown basis of vital air combined with Caloric;—if we believe *Westrumb*, it is elementary air in a state of combination with Caloric, but

Oxygen is much better adapted to the reſpiration of animals, than common atmoſpheric air. If two animals be encloſed in veſſels, one of which contains pure oxygen, and the other common atmoſpheric air, in proportions equal to the ſize of the animals, the former in the oxygen will be found to live from ſix to ſeven times longer, than the latter in common air. It is properly this oxygen which we inſpire, and which is the grand ſupport of animal life. Perſons apparently dead, or in a ſtate of ſuffocation, have been inſtantly reſtored to life by its influence, and from the correſponding teſtimony of ſeveral reſpectable phyſicians, it appears to have been employed with advantage in many obſtinate diſeaſes. The celebrated INGEN-HOUZ therefore gave it the name of *vital air*. It promotes combuſtion in a very high degree. A candle will burn in it from ſix to ſeven times longer than in common air, with a much greater degree of heat, and a more brilliant flame. Bodies, in a glowing ſtate, are immediately inflamed, when put into oxygen gas; and even metals,

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the baſis of the former cannot be diſcovered; according to *Fourcroy*, it is an unknown elementary matter united with inflammable air; in the opinion of *Lavoiſier* it contains the acidifying principle, OXYGEN, and the principle of Heat, CALORIC; Mr. *Cavendiſh* maintains that it is dephlogiſticated water; and according to *De la Metherie*, it is an unknown ſubſtance combined with water and fire; &c. &c.

which

which are not very fuſible, are melted in it, and converted into oxyds, or calces, with the greateſt facility.

Azote, by others called phlogiſticated, mephitic, corrupted, or ſuffocative air, is abſolutely irreſpirable, and not miſcible with water. It ariſes from the change which atmoſpherical air undergoes in every proceſs of combuſtion, putrefaction, and reſpiration, whether produced by nature or art.

Azote enters into no combination with water, but may be rendered leſs hurtful by ſhaking it with that fluid: this accounts in ſome meaſure for the ſalubrity of the ſea-air. It greatly promotes the growth of plants, and readily accumulates in apartments filled with people, or containing articles freſh-painted with oil-colours, or in which ſtrongly fragrant flowers are kept, without having any acceſs of freſh air. We ſhould be extremely cautious in entering ſuch places; as diſeaſes of the breaſt and lungs are too frequently the conſequences of neglect, obſtinacy, or ignorance.

The *Carbonic acid* of the French is the *fixed air* of Dr. BLACK, and the *Aërial acid* of BERGMAN. This ſpecies of air is miſcible with water; but in its pure ſtate equally irreſpirable as the Azote. It derives its origin, partly from the vinous fermentation of vegetables, and ſome animal ſubſtances, and partly from the mild alkaline ſalts and earths

combined with acids. Much of this air is found in mines, where it frequently diſtreſſes the workmen by its ſuffocating qualities. It is alſo obſerved in moſt mineral waters, where a ſtratum of it ſometimes ſwims upon the ſurface of the well. Theſe waters, as well as fermented liquors which contain a conſiderable portion of fixed air, receive from it the well known pungency ſo agreeable to the palate. Hence flat and ſpoiled beer, or wine, may be corrected and reſtored to its former briſkneſs, by the addition of fixed air evolved from chalk and vitriolic acid; or by mixing it with new beer or wine in a ſtate of fermentation.

This ſpecies of air quickly extinguiſhes fire, and ſtrongly attracts the fumes ariſing from candles. As it is unfit for reſpiration, animals cannot live in it. The warm-blooded animals die in it much ſooner than any other; thoſe of an amphibious kind ſomewhat later; inſects are not irrecoverably killed by it; irritability is ſuddenly deſtroyed, and the heart of an animal ſo deprived of life, though ſtill warm, no longer exhibits any ſigns of motion.

There is another ſpecies of mephitic air, which is not miſcible with water, which burns with a flame, and if mixed either with atmoſpheric air, or oxygen gas, inſtantly catches fire, and is exploded: this has received the name of inflammable air *, and

* This air may be obtained in a great variety of ways, from all ſubſtances liable to inflammation, or containing combuſtible

and deſerves to be mentioned here, although it cannot be conſidered as a conſtituent part of the atmoſphere.

With reſpect to the *ſpecific gravity* of the different airs before enumerated, it is in this place only neceſſary to obſerve, that the heavieſt is the fixed air, or carbonic acid gas; next to this comes the azote and oxygen, both of which are heavier than the common air of the atmoſphere; and laſtly, hydrogen, or imflammable gas, which is the lighteſt of all; for it is even lighter than the pureſt atmoſpheric air.

When the atmoſphere is too much impregnated with any of the mephitic gaſes, its influence on the human body is extremely noxious. Thus we ſee

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combuſtible matter, by means of heat, fermentation, acids, and the like; nay even from metals, by directing the ſteam of boiling water through a red-hot metallic tube.—It is the ſpontaneous production of nature, throughout her *three* kingdoms. In mines, in ſubterraneous caverns, and particularly in coal-pits, it is known by the name of *choak-damp*. It is copiouſly generated in the inteſtines of living animals, and is frequently met with in common ſewers, burying grounds, and places where dead animal bodies are expoſed to putrefaction.

The white Dittany, (*Dictamnus albus*, Lin.) when in flower, generates ſo great a quantity of inflammable air, that the atmoſphere around it has been obſerved to catch fire. In ſwamps, pools, and other ſtagnant waters, where a number of plants, particularly ſage, calamus, and the like, are putrifying, we find a ſpecies of inflammable gas, which is known by the name of *marſh-air*, or more commonly, the *ignis fatuus*, or *Will-o'the-Wiſp*.

many of the workmen in lead-mines dying in the prime of life, of an obſtinate and incurable colic, which is attended with the moſt painful obſtructions.—Painters, glaziers, potters, and manufacturers of glazed earthen ware, are from a ſimilar cauſe expoſed to the ſame dreadful diſeaſe; being obliged to make uſe of great quantities of lead* in different forms.

It is almoſt unneceſſary to mention the frequent and ſudden deaths that have taken place from the exploſion of inflammable air in mines, or from the opening of pits, deep wells, and other confined places. Neither is any thing ſo much cal-

* Whether this inſidious and deleterious metal be communicated by inhaling its vapours through the lungs, or by abſorbing them through the pores of the ſkin, the effects of it are equally dangerous and fatal. The internal uſe of ſulphur, and both the internal and external uſe of vegetable oils, or animal fats, are the only antidotes hitherto diſcovered againſt this virulent bane of the manufacturer and the artiſt.

Moſt trades and occupations are ſubject to peculiar diſeaſes; in ſome the materials of the manufacture have a pernicious influence on the body, and in others the nature of the employment is hurtful, either from requiring a ſedentary life, a reclined, ſtooping, or ſtanding poſture, or from being performed in a confined air, or at a great fire, and the like. Hence *millers*, *hair-dreſſers*, and *ſtone maſons*, frequently die of a conſumption of the lungs, in conſequence of the minute particles of duſt which they are continually obliged to inhale.—Manufacturers of wool, and particularly hatters, are much troubled with obſtinate cutaneous diſeaſes; and all thoſe whoſe buſineſs is attended with greaſe and duſt, ſuffer more or leſs from the conſequences of uncleanlineſs.

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culated to corrupt and poiſon the air, to fill it with noxious vapours, and to generate diſeaſes, as the *burying-grounds* eſtabliſhed within the walls of populous cities, where human bodies are depoſited, as if with an apparent deſign to produce an atmoſphere, which is particularly fatal to the tender lungs of children, and in no ſmall degree hurtful to adults.

As the maſs of atmoſpheric air is inceſſantly corrupted by the reſpiration of men and animals, by the burning of ſo many natural and artificial fires, by the diſſolution and putrefaction of innumerable ſubſtances, and by various other phlogiſtic or deſoxygenating proceſſes, it would at length become altogether incompetent for its original deſignation, if Nature had not provided effectual means for its improvement and reſtoration. Among the moſt powerful of theſe, we may place the growth and vegetation of plants.—For this very important diſcovery we are indebted to Dr. PRIESTLEY, who was ſo fortunate as to hit upon it, after he had long employed himſelf in fruitleſs attempts, to improve and reſtore corrupted air, by artificial means. He found, that air, rendered mortal by the breathing of animals which had expired in it, was again ſo completely reſtored by the vegetation of plants, that, after the lapſe of ſome days, an animal could live in it with equal eaſe, and for the ſame length of time, as in a ſimilar quantity of common atmoſpheric air.

Theſe

These experiments, indeed, did not succeed with some Naturalists; and Priestley himself, upon repeating them with different plants, found the results rather varying and doubtful: but Dr. INGENHOUZ removed the greater part of these difficulties, by his book, "Experiments upon Vegetables, 8vo. "London, 1779." This ingenious philosopher remarked, 1st, That most plants have the property of correcting bad air within a few hours, when they are exposed to the *light of the sun*; but that, on the contrary, *during the night*, or in the *shade*, they corrupt the common air of the atmosphere;—2d, That plants, from their own substance, afford a very pure dephlogisticated air, or Oxygen, when exposed to the rays of the sun; but a very impure air or Azote at night, or in the shade;—3d, That not all the parts of plants, but only the green stalks of leaves, particularly through the sides opposite to the soil, produce this beneficial effect;—4th, That the disengagement of pure or vital air does not commence until the sun has been some time above the horizon; that it ceases altogether with the termination of daylight; and that the disadvantage arising from the impure exhalation of plants, during the night, is far exceeded by the great advantage they afford during the day; insomuch, that the impure air, generated by a plant during the whole night, scarcely amounts to a hundredth part of the pure vital air or Oxygen, exhaled from the same plant

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in two hours of a ſerene day.—Thus we diſcover a moſt ſtriking phenomenon in the œconomy of nature; ſince the vegetation of plants continually counteracts the noxious effects of reſpiration, combuſtion, and putrefaction *. In this manner, the atmoſphere is conſtantly preſerved in that neceſſary ſtate of purity and temperature, which is the moſt ſalutary both to animals and vegetables.

We have learnt the effects produced on the human body by the atmoſphere and the changes of the weather, partly from obſervations made by ourſelves and others, and partly from their influence on inanimate matter, by which we can judge in ſome meaſure of its analogous effects on the human frame; but we ſhould not thence conclude that our knowledge, in this reſpect, is either complete or infallible. Obſervations may frequently deceive us, ſince the human body, be-

* It ſhould be recollected here, that when the growth of plants is interrupted by the cold of winter, ſo that they no longer generate a beneficial air to purify the atmoſphere, Nature has ordained it, that this very cold of the winter itſelf contains the moſt effectual virtues to ſtop the progreſs of putrefaction. We further find, that in the moſt unwholeſome, and particularly in marſhy countries, thoſe very plants appear to be very profuſely diſtributed, which moſt eminently poſſeſs the property of purifying the air. And as the pure air, or oxygen, is of greater ſpecific gravity than the common air of the atmoſphere, it is perfectly conſiſtent with the operations of nature, that the oxygen ſhould ſettle towards the lower ſide of the leaves of plants.

ſides the weather, is inceſſantly expoſed to the effects of other external agents, which may eaſily elude our attention. Further, the atmoſphere ſurrounding us, beſides the properties cognizable by our ſenſes, or diſcoverable by the aſſiſtance of particular inſtruments, may alſo be impregnated with ſubſtances which have hitherto eſcaped our reſearches, and which nevertheleſs may have the power to effect important changes. Laſtly, we ought not to conſider the arguments deduced from analogy as ſtrictly concluſive; we ſhould remember, that the effects of external objects on the living animal fibre are, in many inſtances, totally different from thoſe which they produce on lifeleſs or inanimate bodies.

Recommending theſe general remarks to the conſideration of the reader, I proceed to conſider thoſe particular and poſitive effects, which the different ſtates of the atmoſphere produce on our frame, and in what manner they influence our health.

Warm air relaxes the ſolid parts of the body, and occaſions a ſtronger circulation of the fluids. *Heat* is chiefly oppreſſive to the Nerves; hence the tender and infirm ſuffer ſeverely in hot weather; hence ariſe hyſteric and hypochondriac complaints, convulſions, and diarrhœas. *Cold* renders bodies more compact, particularly the ſolid parts of the animal ſtructure, ſuch as the muſcles, nerves, bones, &c. They become more elaſtic in winter; the appetite for food is ſtronger, and digeſtion

eaſier and quicker. On the contrary, the reſiſtance of the fluid parts becomes ſo great, that even the increaſed powers of the ſolids cannot overcome it, if the cold be too violent. In winter the blood is much diſpoſed to inflammations; hence ſtitches in the ſide, inflammatory ſore throats, rheumatiſms, &c. In perſons who take little exerciſe, the fluids are apt to ſtagnate, and the ſolids to chill during the winter;—upon the whole, however, the effects of cold weather may be rendered leſs hurtful, and even ſalutary to the body, if proper exerciſe be not neglected.

Damp or *moiſt air* ſuddenly relaxes and debilitates; it occaſions a flowneſs in the circulation of the fluids, which gives riſe to obſtructions, and impedes both the circulation of the blood and the ſecretion of humours, by checking inſenſible perſpiration. If the moiſture of the air increaſes, we experience an unaccountable torpor and *ennui*; with the loſs of energy we loſe our gaiety, and the mind is depreſſed with the body. Damp places and diſtricts are always unwholeſome, but more particularly ſo in cold weather. Moiſture, by diminiſhing perſpiration, produces diſorders of the throat, the breaſt, and the abdomen. But the moſt dangerous and fatal effects on the human body have been obſerved to ariſe from moiſt air accompanied with hot weather; for, when moiſture has impaired our energy, heat increaſes the evil in a great degree, by opening the pores through which

which the moiſture penetrates into the body, and, prediſpoſing every part of it to putrefaction and diſſolution. This accounts for the great mortality prevalent during the hot ſeaſon at Batavia, and ſome of the Weſt India iſlands.

Dry and *cool air*, from poſſeſſing a due degree of elaſticity, promotes in an extraordinary degree the ſerenity and alertneſs of mind and body; hence it is found uncommonly ſalubrious to hypochondriacs. But a dry and very cold air generates inflammatory diſeaſes; becauſe it inſpiſſates the blood. Dry and hot air affects us like heat, and enervates the body. But a dry air, which is not too warm, is both agreeable and healthy.

Great and *ſudden changes* from a warm to a cold, or from a light to a heavy air, are highly injurious to valetudinarians, and even to the healthy. Soldiers in camp, and, ſometimes, travellers, feel very ſeverely the bad effects of cold and moiſt night-air, after long marches and journies. Weakly and infirm perſons have frequently ominous ſenſations, previous to any remarkable change of the air.

A moderately heavy and elaſtic air is the moſt agreeable and ſalutary to the human body; hence nature has not aſſigned us our conſtant reſidence on the ſummits of mountains. Yet a light and rarefied air, ſuch as is felt on the higheſt mountains, is not ſo unfit for reſpiration, nor does it manifeſt ſo noxious an influence on the human body, as was formerly believed. The lateſt travellers aſſure us

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of the contrary, and ſpeak in deciſive terms of the ſalutary effects of the air, during a ſhort ſtay in thoſe elevated regions.

Among the different WINDS—which are nothing elſe but ſtrong commotions of the air—the long continued *North wind* is comparatively the moſt wholeſome; it purifies the atmoſphere of noxious vapours, renders the air ſerene and dry, and thus imparts to the human body elaſticity, vigour, activity, and a lively colour. It is, however, troubleſome to perſons of delicate habits, and occaſions in them coughs, inflammation of the throat, pains in the ſide, obſtructions, and febrile diſeaſes. The *South wind* weakens and relaxes the body, and is very apt to produce catarrhal affections. The *Morning wind* is very drying; but *Evening winds* are cool and moiſt, being frequently accompanied with rain and changeable weather. All theſe winds differ materially in their qualities, from local circumſtances, and accordingly as they blow over a Continent, over the Ocean, or over high mountains and icy regions, from which they carry along with them more or leſs of cold and humid particles. But, upon the whole, too dry weather is always more healthy, than that which is too moiſt.

Of the four SEASONS of the year, the *Autumn* is the moſt unhealthy; becauſe then the particles of perſpiration not only remain on the body, but are in a ſtate inclining to putrefaction. This diſadvantage, however, may be eaſily obviated by guarding

guarding ourſelves with proper dreſs and chooſing a ſuitable diet. Too light a dreſs, and too thin ſtockings, are not adviſable at this ſeaſon. The *Spring ſeaſon* is, in general, the moſt healthy. Spring, and the beginning of *Summer*, are moſt ſalutary to children and young perſons; while the Summer, and the beginning of *Autumn*, agree beſt with the aged. The latter end of Autumn, and the beginning of *Winter*, are commonly the moſt healthy ſeaſons to perſons of a middle age.

It has been remarked by medical men, that certain diſeaſes appear and diſappear according to the different ſeaſons. Thus, putrid and bilious diſorders prevail in Summer; inflammatory diſeaſes in Winter, and the catarrhal, mucous, and gaſtric or ſtomachic affections, in Spring and Autumn. It has been further obſerved, that in Spring the blood uſually circulates more freely; hence probably aroſe the ancient practice of blood-letting, and taking laxatives at certain regular periods; both of which I have already pointed out, in the preceding Chapter, as dangerous in their tendency, and always hurtful to the healthy.

As the vegetable kingdom is renewed in Spring, and as vegetation, in general, is moſt lively in that ſeaſon, there can be little doubt, that the pure vital air is then moſt copiouſly evolved, by means of the ſolar light and heat. Hence it follows, that the vernal air is more wholeſome than that of Autumn, which is ſaturated with corrupted

and

and putrifying particles. Still the cold of Autumn, and the frequent winds then prevalent, prove extremely efficacious in counteracting the baneful effects of corruption and putrefaction.

If the temperature of the air correſpond with the natural conſtitution of the ſeaſon, we may expect what is called a healthy year, and that the prevalent diſeaſes will be of a mild nature; but if the weather does not agree with the general laws of the ſeaſon; if, for inſtance, the Winter prove warm, or at leaſt moderate, or the Spring cold and ſevere, with ſudden alternations of heat, we may expect to find the year pretty generally marked with ſerious and obſtinate diſeaſes.

The temperature of the air depends not a little on the natural ſituation of the country, whether it lie high or low; whether its mountains oppoſe or give a free paſſage to the winds; whether it contains flowing or ſtagnant waters or moraſſes, and whether it is open or covered with woods.—Country air, upon the whole, is always purer than that of towns, narrow ſtreets, and crowded buildings.

All *ſtrongly-ſcented bodies* are more or leſs pernicious; as well thoſe of a diſagreeable ſmell, as the greater number of fragrant perfumes. The latter, if too ſtrong, are more particularly dangerous, as a ſenſe of diſguſt does not naturally incline us to avoid them. Among theſe may be comprehended all vegetable odours ſtrongly volatile and pungent, and which thereby ſtimulate and

ſtupify the nerves. Hence people, who carry large noſegays in the hot days of ſummer, are apt to feel themſelves variouſly and ſtrongly affected, particularly with drowſineſs. From this apparently innocent cauſe, head-achs, vertigoes, fainting-fits, and apoplexies have frequently been produced in perſons of a plethoric habit. Theſe, as well as people of a delicate conſtitution, are liable to ſuch affections, from the fragrance of many balſamic plants, but particularly from the ſtrong ſcent of lilies, roſes, pinks, the bloſſoms of oranges, hyacinths, and the like.—Many flowers emit a more powerful fragrance in the night than in the daytime, and the effluvia of ſeveral trees and other vegetable bodies, are peculiarly dangerous, and ſometimes mortal. Of this nature are the walnut and yew trees, under whoſe ſhades perſons have actually died, who had fallen aſleep; and likewiſe the deadly *Upas* of Surinam, and the no leſs poiſonous *Manchineel* tree of the Weſt Indies.

Aromatics of every kind taint the air in a ſimilar manner, introducing into the human body particles foreign to its nature, all exciting more or leſs an inclination to ſleep. Saffron and hops have ſometimes proved fatal; the former in particular has often produced a ſleep terminating in death, in thoſe incautious individuals, who had lain down in the warehouſes or upon the bags, in which it was packed. Ambergris and muſk are alſo, on account

of

of their powerful fragrance, very hurtful to perſons of an irritable and nervous temperament.

Dwellings in the vicinity of lakes, fens, and marſhes, are expoſed to all the noxious effects of a moiſt atmoſphere, namely, to the various ſpecies of intermittent fevers or agues;—on the other hand, it has been obſerved, that perſons living on the banks of rivers, though at times ſubject to theſe, are not very liable to other diſeaſes, and that running water has a tendency to purify the air, when it is ſaturated with inflammable particles.

Too ſudden a tranſition from warm to cold air, or the reverſe, is pernicious; but to exchange, however ſuddenly, an unhealthy atmoſphere for a healthier, is at all times ſafe and highly adviſable. Numberleſs inſtances have proved, that ſuch as were conſtantly indiſpoſed in the corrupted air of a town, very quickly recovered their health, on removing to the purer atmoſphere of the country. Yet the queſtion, *Which air is the moſt wholeſome to live in?* will admit only of a conditional anſwer. We muſt attend not only to the particular conſtitution of the air, but alſo to the nature and habits of the individual. Neither ſhould we too haſtily pronounce every air unwholeſome, that does not appear to agree with us. The air of every climate, whether hot, cold, or temperate, may be called healthy, provided it be pure and clear, and occaſionally agitated by wind: but a groſs atmoſpere, and one loaded with animal or vegetable

exhalations, is certainly deleterious. After all, perhaps the longevity of the inhabitants may be conſidered as the beſt evidence of a healthy diſtrict. Thus we find uncommonly long-lived perſons in high countries, or ſuch as are viſited by frequent winds, and alſo in ſmall ſea-port towns. In villages and places thinly inhabited, the proportion of aged people is conſiderably greater than in cities or populous towns. This may be aſcribed partly to a leſs degree of corruption in the air, and partly to a more ſimple mode of life prevailing in ſuch places: for wealth and riches, the concomitant effects of which are greater luxury and extravagance in living, uſually keep pace with the increaſe of population; and if the numerous chimney-fires of our populous cities did not ſerve as ſo many well-contrived machines for rarefying the atmoſphere, incalculable miſchiefs muſt inevitably enſue.

Of the Improvement of Air in Dwelling-houſes.

A HOUSE built on a riſing ground, on a healthy ſoil, in an open, dry country, and neither expoſed to the greateſt degree of cold in winter, nor to the higheſt point of heat in ſummer, may be ſaid to ſtand in a healthy ſituation. Hence thoſe apartments are the moſt healthful as well as comfortable to the individual, which enjoy a pure and

and free circulation of air in ſummer, and the cheering rays of the ſun in winter: the heat of ſummer being conſiderably tempered by the former, and the ſeverity of winter much abated by the latter. Farther, a proper ſize and height are requiſite to conſtitute a healthful apartment; for low rooms are detrimental to health, particularly when inhabited by large families, and ſeldom aired, or rather, which is frequently the caſe, when all air is carefully excluded by cloſe doors, ſhutters, curtains, &c. The moſt proper place of reſidence in winter is one with a ſouthern aſpect, not only as being more dry, but alſo more cheerful, and therefore attended with a favourable influence on the ſpirits. In ſummer, the ſituation of a room may be choſen either to the North or to the Eaſt, the latter of which is preferable, becauſe it admits the firſt enlivening rays of the Sun.

Although it is not in every perſon's power to chooſe his habitation agreeably to the laws of health; yet this choice of a pure and healthy air is not ſufficiently attended to, and it certainly deſerves as much conſideration in purchaſing an eſtate or country-houſe, as the quality of the ſoil or other lucrative advantages.

The local conſtitution of the air depends not merely on the exhalations of the ſoil itſelf, but likewiſe on the different vapours, conducted to and blended with it by the winds, from adjoining

places. Thus in a dry and ſandy country, conſidered of itſelf as healthy, the air may be rendered extremely unwholeſome from the vicinity of marſhes or other ſtagnant waters.

The better to judge of the ſalubrity of the air in any diſtrict, we ſhould examine the properties of the wells and ſprings; for both *air* and *water* abſorb the ſaline and mineral particles of the ſoil. We may pretty certainly conclude, that a country producing good water, enjoys likewiſe a ſalubrious air; and as the beſt water is taſteleſs, ſo the pureſt air is free from any ſmell whatever.

The moſt certain marks, by which to diſtinguiſh whether the air in rooms be damp or not, are the following: the walls or tapeſtry change their colour; bread in cloſets acquires a mouldy ſurface; ſponges in the rooms retain their moiſture; loaf-ſugar turns ſoft; iron ruſts; braſs and copper acquire a green colour, or verdigris; and wooden furniture moulders and crumbles to pieces.

The ſitting-room ought, if poſſible, to be above the ground floor, or in the ſecond ſtory; it ſhould be ſo conſtructed as to admit a free current of air; but if this cannot be done, it ſhould be frequently aired by opening the windows in dry weather, or by fumigating the room, either with vinegar dropped upon warm ſtones, or evaporated in a baſon over a lamp, or with ſugar, juniper-berries, and the like.

Every

Every room is filled with *three* different *ſtrata* of air: 1. the lower part of the room contains the heavieſt ſpecies of air, namely, fixed or carbonic acid gas, particularly in apartments ſituated on the ground-floor, or even under ground; 2. the middle part of the room is filled with the lighter atmoſpheric air; and 3. the uppermoſt ſtratum contains the lighteſt or inflammable air, the moſt corrupted of the three, in conſequence of the proceſſes it has undergone by reſpiration and combuſtion. In lofty apartments this contaminated ſpecies of air is not inſpired by the lungs; becauſe the middle ſtratum, or the moſt wholeſome of the three, extends to a height above that of a man.

A continual change of the air, by opening the doors and occaſionally the windows, however adviſable, is yet not ſufficient to preſerve a healthy atmoſphere in an apartment. For this important purpoſe the following improvements may be ſuggeſted as uſeful: 1ſt, ſmall apertures in the ceiling of the room, or through the walls cloſe to the ceiling, in an oblique direction, ſo that the rain and ſnow cannot penetrate into it; 2d, Ventilators, that is, ſmall moveable wheels made of braſs or ſheet-iron, which are applied to ſome part of the window-panes, and ſet in motion by the preſſure of the external air. This is an excellent contrivance to introduce freſh atmoſpheric air into a room, by occaſionally opening and ſhutting the door. The moſt proper height for placing theſe

ventilators is about ſeven feet from the floor; 3d, Air-tubes running in a ſtraight direction from the door to the fire-place, or rather to the wall of the chimney, and concealed under the floor of the room. As ſuch tubes, however, are very expenſive, and appear better calculated to convey the ſmoke up the chimney, after all means have been tried in vain, than to conduct the corrupted air from the upper part of a room, I ſhall mention a better and much eaſier method of effecting this purpoſe. It is a late diſcovery of a phyſician in France, who contrived it with a view to ſave the great expence of ventilating or airing large wards in hoſpitals, filled with patients who laboured under putrid diſtempers, particularly in the heat of ſummer. He cauſed a number of ſmall holes to be made in the uppermoſt part of the window-frames; into theſe holes he placed from without an equal number of funnels, preſenting an aperture of nine or twelve inches diameter, and terminating in the inſide almoſt in a point, or at leaſt in an opening not exceeding the ſize of a ſmall quill. By means of theſe ſimple machines, the air in the ſick-rooms was ſo effectually renewed, by the great and conſtant preſſure of atmoſpheric air from without, that any other artificial proceſs for correcting the putrid air in a large hoſpital was judged to be unneceſſary.

Above all things, the windows and doors of ſitting and bed-rooms, when it can be done conveniently, ought to be left open for a certain ſpace

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of time, every day. This, however, requires to be done at the proper time, neither too early in the morning, nor when it grows dark in the evening, during the vernal and autumnal months; nor at the time when the horizon is overſpread with a thick fog. The windows ſhould be opened, when the air is pure and ſerene; or, in general, when there is leſs danger to be apprehended from the external air than from that within. Sometimes it may be proper to make uſe of what is called *pumping* the room, or moving the door backward and forward for ſome minutes together: but in ſpring and autumn, our ſitting-rooms, and even in winter, bed-rooms, ought to be perflated every clear day, by currents of freſh air, for a conſiderable time.

In the hot days of ſummer, the windows may be opened early in the morning and in the evening, in order to cool and refreſh the heated air of the room by that from without. It is however not ſafe (and has ſometimes proved fatal) to leave the windows of a bed-room open at night during the ſummer-months, as there is no ſmall hazard of checking perſpiration by the cool night-air; the ſuſceptibility of the pores being then very much increaſed by the heat of the day, and the warmth of the bed. Rooms which we inhabit in the day-time may be ſafely left open during the night.—In ſummer-houſes, or ſuch as are ſurrounded with plants and trees, it will be proper not to open the windows of bed or other rooms, till ſome time after ſun-riſe, and to ſhut them at ſun-ſet: they require

alſo to be opened and ſhut ſooner in hazy than in ſerene weather.

The airing of apartments ſhould not be neglected even in winter, as coal-fires alone are not ſufficient to carry off the corrupted particles of air, unleſs they be aſſiſted by ventilators.—Here I muſt oppoſe and contradict a prevailing, yet miſtaken notion, that fire in a room where the windows are open introduces moiſt air. On the contrary, the moſt proper time for opening the windows is after lighting up a briſk fire; as the warmer air of the room will then be powerfully attracted by the colder atmoſpheric air, and the corrupt particles of the air within moſt ſpeedily diſſipated.

In *moiſt* and *cold* air, the dreſs ſhould be ſomewhat warmer than uſual: Flannel may then be worn with double advantage next the ſkin, and the rooms we inhabit ſhould be warmed, or at leaſt fumigated, with the berries of Juniper or ſimilar ſhrubs. Fumigation is likewiſe attended with this advantage, that it contributes to dry and in ſome degree to warm the air.

In *moiſt* and *warm* air the exploſion of a little gunpowder will be of uſe, or vinegar may be evaporated with greater ſafety, and the floor and walls ſprinkled over with this excellent antiſeptic.

Hot and *dry* air may be tempered by placing veſſels filled with cold water in different parts of a room; or, as is often practiſed in hot climates, by ſprinkling water over the floor.—The greater or

leſs

leſs degree of corruption of the air, in an apartment, depends very much on the kind of labour or exerciſe performed in it: Six watchmakers will not corrupt the air nearly ſo much as two carpenters would do in the ſame ſpace and time; hence appears the neceſſity of appropriating lofty rooms, inſtead of low garrets for the workſhops of mechanics.

Green plants and flowers placed before the windows are both an agreeable and uſeful ornament, if not of too ſtrong a fragrance. In ſerene weather, it may be expedient to ſtrew freſh plants (not flowers) in a dwelling-room, expoſed to the rays of the ſun, taking care, however, to remove them as ſoon as the ſun withdraws. This method of expoſing plants, or even the branches of trees with green leaves, in apartments, may have a beneficial influence on valetudinarians, and particularly on aſthmatic perſons, as vital air, or *oxygen*, is thereby generated, and introduced very gradually into the lungs,

Large trees with thick foliage ſhould not be placed very near the windows of a houſe; for, beſides that they obſtruct the acceſs of day-light and freſh air, and have thus a tendency to make the rooms damp, their exhalations in the evening, and during the night, are by no means wholeſome. Trees planted at the diſtance of eight or ten yards from the houſe, do not prevent the free acceſs of air; they preſent an agreeable object to the eye, and cannot be too much recommended,

both

both on account of their cooling ſhade in ſummer, and the ſalutary exhalations they emit during the day.

It has been already mentioned, that the burning of candles corrupts the air; for which reaſon the cuſtom of illuminating aſſembly or other large rooms, with a *ſuperfluous* number of candles, muſt be very detrimental. This extravagance becomes ſtill more dangerous in places where, beſide the crowd of people, great quantities of proviſions, dreſſed with the richeſt ſpices of the Eaſt and Weſt, contribute to ſaturate the air with the moſt heterogeneous particles. And as perſons of tender lungs muſt ſuffer extremely in ſuch an atmoſphere, it would be proper to provide all public rooms with a competent number of conic ventilators, of the deſcription before mentioned.

Strictly ſpeaking, we ought not to ſit in the room where we dine, or take victuals, until it be aired again: thoſe who can afford this luxury, ſhould be careful not to ſtay for hours together over their bottle in the dining-room: the bad effects of ſuch contaminated air are not perceived by the perſons continuing their libations after dinner, but are very ſenſibly felt by any one coming in from the freſh air.

It is no leſs unhealthy to ſleep in a room where a quantity of *green fruit* is kept, a circumſtance not attended to in country places, particularly by thoſe who deal in fruit. From its fragrance a portion of inflammable matter exhales, which ſoon impregnates

impregnates the air. Hence females of delicate habits have been known to faint, in approaching places where a few quinces were kept. For the ſame reaſon ſtore-rooms and pantries are extremely unwholeſome, if proviſions of all kinds, animal as well as vegetable, be kept in them; eſpecially oil, candles, fat, fleſh meat, whether raw, boiled, or roaſted, paſtry, and the like.

As foul linen readily imbibes the perſpirable matter of the ſkin, it ſhould never be ſuffered to remain any time in a bed room, or ſitting room.

If poſſible, we ſhould not ſit through the day in a room in which we have ſlept; as the bed-clothes, and particularly feather beds, very ſlowly part with the exhalations they have imbibed during the night, neither is it ſufficient for purifying the air of the room, that it has been ever ſo well aired in the morning.

The vapour of *charcoal* produces, particularly in cloſe apartments, dangerous and frequently fatal effects. It fills the atmoſphere with ſulphuric particles which may be inſpired, but cannot be expired:—they retard the motion of the blood-veſſels, ſtagnate the blood itſelf, penetrate into the head, and produce an acute pain, vertigo, and torpor—hence the greateſt precaution is neceſſary, where charcoal is uſed, as innumerable fatal accidents have happened from this ſource. Dyers, who employ it for drying their cloth upon frames, ſeldom fail to experience great injury to their health.

All

All employments, in which perſons work among impure wool, oil, colours, and the like, are to a certain degree detrimental to health. Waſhing, ironing, dreſſing the hair with greaſy curling irons, burning lamp-oil, frequent painting of the walls, all ſaturate the air of a room with pernicious damp, and ſulphuric vapours. From the change, which oil and candles in a ſtate of combuſtion produce in the colour of a white wall and white curtains, we may infer, that this fetid ſteam muſt alſo penetrate into the human body, and if ſo, muſt materially affect it.

It farther deſerves to be remarked, that all damp vapours are prejudicial, although they ſhould not in themſelves have a tendency to corrupt the air. Hence the keeping of wet linen, or even wet clothes, umbrellas, and the like, in dwelling-rooms, ſhould by all means be avoided. Mechanics and others who are obliged to dry wet things in their ſtrongly-heated apartments—joiners, turners, potters, bookbinders, &c. are particularly liable to ſwellings, and other diſagreeable affections in the relaxed veſſels of abſorption.

Of Heat and Cold.

As obſervation and experience inform us, that immoderate heat relaxes the body, overheats the blood, and exſiccates or conſumes the other fluids; and that the people who live in temperate regions are more hardy and vigorous, and attain to a greater age,

age, than the inhabitants of warmer climates; it follows from theſe premiſes, that we ought not to enervate the human body by keeping it immoderately warm, by dreſſing it with a ſuperfluity of clothes, by plunging it unneceſſarily into hot baths, by uſing too ſtrong fires in temperate weather, or leaſt of all by ſleeping in warm rooms, and perhaps on the moſt heating of all ſubſtances, feather beds. The temperature of a ſitting-room ſhould not exceed 60° of Fahrenheit's thermometer; that of a bed-room may be about 50°, as the medium temperature of our climate is between 50 and 55°.

Although man is, no doubt, capable of inuring himſelf to a very great degree of heat as well as of cold, yet ſudden changes can be ſupported only by the few who poſſeſs very hardened conſtitutions. The gradual changes of the ſeaſons prepare us in the ſafeſt manner to ſuſtain all the alternations of cold and hot weather. It is therefore an error, and of no ſmall conſequence, in the modern ſyſtem of education, that we generally endeavour to habituate our children to the ſupport of cold weather only. Perſons who cannot bear the heat of the ſun, or ſtrongly-heated rooms, are, from their exceſſive delicacy, frequently expoſed to the moſt violent, nay to mortal accidents. Hence children ought to be ſlowly and gradually accuſtomed to theſe inconveniences, which indeed occur frequently, and are more dangerous, than thoſe ariſing

ariſing from ſudden tranſitions to a colder temperature: for the effects of the latter may, in a great meaſure, be obviated by exerciſe and muſcular action.

In the ſultry days of ſummer, we ſhould be particularly on our guard againſt violently overheating the body;—in autumn, we ſhould not dreſs too lightly, and in the mornings and evenings always ſomewhat warmer;—in ſhort, we ought to avoid every thing that appears likely to check and repel perſpiration. The baneful cuſtom of accommodating our dreſs to the almanack and the faſhion, rather than to the viciſſitudes of the weather, in this inconſtant climate, muſt neceſſarily be productive of many diſagreeable conſequences. Above all things, we ought to change our ſummer-dreſs pretty early in autumn, and to clothe ourſelves gradually warmer, according to the variations of the weather. Yet after all, perhaps it would be moſt adviſable to accuſtom ourſelves to one kind of dreſs only for all ſeaſons. The propriety of this cuſtom, I ſhall more particularly conſider in the fourth Chapter.

With reſpect to the proper time for heating rooms in autumn, it has been ſuppoſed, that early fires are unwholeſome and productive of frequent catarrhs. This aſſertion is certainly ill founded; for in warming a room, as well as in clothing the body, we ſhould not ſo much be regulated by the particular time of the year, as the ſtate of the weather, and the degrees of actual heat and cold: in

in attending to this circumſtance, we cannot eaſily miſtake. If, in the temperate days of autumn, the room ſhould feel colder than the external air, it is time to make a moderate fire: in damp and cold weather this is an uſeful precaution, even in ſummer. Thoſe who from caprice, parſimony, or prejudice, would rather ſhiver on ſome weeks longer, than conſult their ſenſations, often feel the conſequence of a violent cold. The Dutch and German ſtoves certainly afford more uniform heat in a room, though they might not be conſidered cheerful enough for an Engliſh company.

As we can neither breathe nor live without freſh air, we ought not to withdraw our bodies too much from the bracing effects of cold. In this reſpect, we ſhould act conformably to nature, that is, in the ſame degree as the warmer weather changes to a colder ſtate, we ſhould gradually expoſe ourſelves to the various changes of temperature. The cold will then neither feel unpleaſant, nor impede the neceſſary perſpiration; eſpecially if we oppoſe it with vigour, and bodily exerciſe. We ought alſo to take more ſolid ſuſtenance in winter than in ſummer; becauſe, by the longer continued motion or digeſtive proceſs of the ſtomach, the circulation of the blood is accelerated, from which the natural heat of the body is produced. Nature herſelf dictates a compliance with this precept, as ſhe has provided us with more ſubſtantial articles of food during the former ſeaſon than the latter.

Laſtly, as every ſudden change of the weather, from heat to cold, and the reverſe, is prejudicial to the body, we ought to guard againſt every circumſtance, by which *perſpiration* may be ſuddenly checked. Hence we never ſhould remove from a ſtrongly heated apartment into a freſh and cold air, unleſs we are provided with a warmer dreſs;—in hot days, or after violent exerciſe, we ſhould not frequent vaults, cellars, or ice-houſes, undreſs immediately after over-heating the body, nor take reſt upon a damp ſoil or upon ſtones, nor bathe in cold water. Such tranſgreſſions have often been puniſhed with inſtant death, or, what is ſtill worſe, have brought on a painful and lingering ſpecies of conſumption, which has hitherto baffled the united efforts of the Faculty, and which annually makes dreadful havoc among people of a middle age*. It is devoutly to be wiſhed, that the

* According to the ſtatement given by the Bills of Mortality, the total number of deaths in London, during the three ſpring months of 1799, amounted to 5271. Among theſe, no leſs than 1353, or *upwards of one-fourth*, were carried off by *conſumption!*—Although conſumption and *decline* are terms often uſed to expreſs many other *chronic* diſeaſes, as well as *pulmonary conſumption*, ſo that the above ſtated number probably includes various ſpecies of decline, yet, even with theſe allowances, the number of victims to *general conſumption* is truly terrific. Let the reader reflect, for a moment, on the following melancholy inference:—If the population of the country conſiſt of between nine and ten millions, of whom the 30th or the 33d part, that is about 300,000,

the experiments, now purſued with factitious airs or gaſes, and with the fox-glove, may afford ſome remedy againſt this formidable deſtroyer of the human ſpecies, which cuts off incredible numbers in the bloom of life, and ſpares neither age, rank, nor ſex.—And, as there is ſo much reaſon to believe, that a great proportion of conſumptive caſes originate from the ſudden tranſitions above mentioned, no language can be ſtrong enough to deprecate practices, as injudicious as they are deſtructive.

300,000, die annually, it follows that this mercileſs diſeaſe, CONSUMPTION, cuts off about 80,000 perſons every year, in Great Britain alone, and theſe generally in the prime of life, when Society ought to be benefited by their mental and bodily exertions!!

CHAP. III.

Of Cleanlineſs, and its various modifications, ſo far as it is immediately connected with Health;—the management of the Teeth;—the uſe of Baths, &c.

Of Cleanlineſs in general.

THIS domeſtic virtue ought to extend its influence to every object connected with the human frame; to the preparation and conſumption of food and drink, to dreſs, habitation, houſehold furniture, and all our phyſical wants; in a word, cleanlineſs ſhould not be confined merely to the interior domeſtic œconomy; it claims our attention in every place which we occupy, and wherein we breathe.

Let our clothes, linen, beds, covers, blankets and ſheets be clean and dry; as all theſe ſubſtances abſorb perſpirable matter, and check the proceſs of perſpiration. Articles of dreſs which are ſoiled, and come into contact with the ſkin, being placed immediately over the pores, reimbibe the humours already perſpired, and return them to the body by the abſorbents. Dirty linen will never attract the uſeleſs or noxious matter, which is ſecreted from the

the blood, and ejected from the body; it remains on the pores of the ſkin, and is either again abſorbed by the veſſels, or clogs thoſe emunctories which require always to be kept open. For a ſimilar reaſon, it is highly improper and dangerous to wear the clothes of ſick perſons, eſpecially in contagious diſtempers.

Let the body, and particularly the joints, be frequently waſhed with pure water, eſpecially in ſummer, when the perſpirable matter, being of an unctuous, clammy nature, obſtructs the excretion by the pores.—The face, neck, and hands, being moſt expoſed to the air, duſt, and the like, ought to be daily waſhed, both morning and evening. Attention ſhould alſo be paid to the ears, by cleaning them occaſionally; ſo that the ſenſe of hearing may not be impaired by an accumulation of wax, which from its acrid nature may prove unpleaſant as well as injurious. The whole head ought to be frequently waſhed and cleaned, even though no hair-powder be uſed; as it perſpires very much, and is beſides expoſed to duſt and other particles in the atmoſphere. Waſhing opens the pores, while the comb, by its cloſe application to the ſkin, diſſolves the viſcid humours, and renders them fluid.

The mouth ſhould be rinſed every morning, after dinner, and at night, with cold water; but in winter the chill ſhould be taken off. The frequent waſhing of the mouth is otherwiſe neceſſary, be-

cauſe the viſcid ſlime, and ſmall particles of food which ſettle about the interſtices of the teeth, are very apt to putrify, and, if not removed, will infect the breath, and gradually injure the teeth themſelves. Beſides, this ſlime ſettles on the tongue, covers the papillæ by which food is taſted, and renders the palate leſs ſenſible.

It is ſcarcely neceſſary to obſerve, that the noſe alſo ſhould not be overlooked, as by neglecting to remove the ſecreted moiſture in due time, the effects may become troubleſome and detrimental to the organs of ſmell. In children, the noſe ought to be occaſionally waſhed; it having been found that the unpleaſant ſmell, peculiar to ſome infants, is owing to the habitual neglect of cleaning that organ.

The tongue ſhould be cleaned every morning, either with a ſmall piece of whalebone, or with a ſage leaf. This leaf is likewiſe uſeful for poliſhing the teeth. To clean the throat, we ſhould gargle it with freſh water, and ſwallow a mouthful of water every morning—the latter, however, muſt not be attempted too haſtily; but, when we once accuſtom ourſelves to the practice, we ſhall find it attended with advantage.

It is neceſſary, particularly in hot weather, to waſh the feet frequently; as they perſpire much, and are more expoſed to duſt than any other part of the body. The water ſhould be warm, but not too much ſo, becauſe hot water thus uſed relaxes the

the fibres, drives the blood upwards, and occaſions head-achs. The proper degree of heat for young perſons to waſh in, is between 96 and 98° of Fahrenheit, and for the aged between 98 and 100°, or ſomewhat more than milk-warm.

The removing of the beard and nails is no inſignificant matter in the care of health. By ſhaving, we promote perſpiration. Long nails, eſpecially as they were in faſhion ſome years ago, disfigure the hands, and prevent the feet from expanding properly: but the nails ought not to be cut too cloſe, otherwiſe the toes will be obſtructed in their preſſure on the ground, and the fingers in feeling. They may alſo be eaſily wounded; and wounds under the nails are generally attended with diſagreeable conſequences, on account of the many nerves running in that direction. Too long nails on the toes are apt to grow into the fleſh, to become an obſtacle in walking, and ſometimes to occaſion conſiderable pain.

In the veſſels uſed for preparing food and drink, we ought likewiſe to pay proper attention to cleanlineſs. Every particle of filth introduced into the ſtomach may prove hurtful to it, to the tender inteſtines, to the blood, and conſequently to the whole body. For the ſame reaſon, it is not only indelicate, but alſo unwholeſome, to dine or take any food in places where an offenſive ſmell prevails.

On the management of the Teeth.

THE principal requiſite for the preſervation of the teeth is, never to retire to reſt without having cleaned them: for this prevents the viſcous matter of food, collected during the day, from corrupting them in the night. The tooth-ach, now ſo common, is frequently owing to a hollow ſtate of the teeth, but ſtill more frequently originates in a want of cleanlineſs. The cleaning of the teeth, however, requires precaution. What is called the Tartar of the Teeth, is of a corroſive nature, and ſhould be removed with the greateſt care. The manner in which moſt Dentiſts treat the teeth, as well as their powders, tinctures, and other dentifrices, although highly puffed off, and ſtrongly recommended, are obviouſly pernicious. They deprive the teeth of their enamel, make them looſe, and ſpoil the gums. The various dentifrices, whether *Royal* or *Imperial*, advertiſed in the public papers, are at leaſt of doubtful, if not injurious effect;—it is an aſtoniſhing inſtance of credulity and infatuation, that people will take external and internal *medicines upon truſt*, when they would heſitate to take any *food*, with which they are unacquainted.

If there be too much tartar, ſo that it adheres like a cement between two teeth, its being incautiouſly removed will deprive the teeth of the tartarous

tartarous coheſion, and conſequently of their ſupport; thus, from the conſtant contact of the tongue, lips, and food, they will be ſhaken and looſened. The ſame will happen, ſhould the tartar be allowed to eat away the gum from the root of the tooth. If in this caſe the foundation of the tooth be injured, it will neceſſarily be rendered looſe; the gums being no longer able to retain a tooth, which is deprived of its intermediate cement.

The tartar therefore muſt not be broken, all at once, with iron or glaſs inſtruments; but may be gradually ſcraped away with a blunt or broad cut quill, or ſome ſimilar ſubſtance, from which the enamel of the teeth can ſuffer no injury. Moſt kinds of diſſolvent drops, eſpecially thoſe ſold as ſpecifics for whitening the teeth, are made up of vitriolic acid, diluted with ſome diſtilled waters—They are of no ſervice, but, on the contrary, remove the enamel with the tartar, and thus ſpoil the teeth for ever. The common tooth-bruſhes are liable to the ſame objection.

To prevent the tartar from ſettling on the teeth, they ought to be kept clean, by waſhing them every morning and evening. Certain articles of food and drink ſhould likewiſe be mentioned, as having a tendency to produce and accumulate the tartar—ſuch are all viſcous and ſaline ſubſtances, as ſalted and ſmoked meat, cheeſe, roaſted eggs, the fleſh of tame and wild animals kept too long for the ſake of making it more tender and palatable, truffles,

and

and all ſpecies of muſhrooms; beans, peas, cheſnuts, vinegar, tart wines, and all kinds of acid fruit.

An expedient equally ſafe and effectual, for removing the tartar, is, to cover the teeth with a fine powder of *Gum Tragacanth*, or with ſoft wax, and by that means to extract the tartar at once, together with this adheſive covering.

Although it does not enter into the plan of theſe Lectures to treat of the various diſeaſes to which the teeth are ſubject, or to deſcribe the different methods purſued in curing them, yet I judge it neceſſary to point out ſome of the moſt ſimple and approved remedies in that very painful affection, the tooth-ach. If the complaint proceed from a hollow and carious tooth, ſome ſoft extract of the Peruvian Bark may be placed in the cavity of the tooth; if this ſhould not remove the pain, a few drops of *Cajeput oil* upon cotton may be applied to the hollow tooth, or rubbed externally upon the painful ſide of the cheek. THUNBERG, the Swediſh Traveller, introduced the uſe of Cajeput oil into Europe, having often witneſſed its powerful and almoſt inſtantaneous effects in the Eaſt Indies, where it is the laſt and only comfort of gouty and rheumatic ſufferers.

Dr. Richter, an eminent Phyſician of Göttingen, informs us that he has frequently relieved the moſt violent tooth-ach, by applying externally the eſſence of *pimpinella*, or Burnet-ſaxifrage, with an equal quantity

quantity of laudanum, adding to it a drop or two of the eſſential oil of cloves. Though external remedies are not likely to effect a radical cure of this malady, yet in urgent caſes they may be ſafely reſorted to, eſpecially if applied ſo as not to injure the ſkin of the face; for they will often produce a temporary relief. If, however, the tooth-ach proceed from *no local* cauſe; if, for inſtance, it be owing to a corrupted ſtomach, to catarrhal, rheumatic, hyſteric, venereal, or other affections; all the ſpecifics ever diſcovered cannot remove the pain, until the cauſe alſo be, wholly or in part, removed. In my own practice, I have found the oil of Savin, or Juniper oil, preferable to laudanum, in its effects on a hollow tooth; the latter is at beſt an uncertain remedy.

In ſcorbutic affections of the teeth and gums, a vegetable diet, conſiſting chiefly of ripe fruit, and mucilaginous vegetables, will be found the beſt corrective. Beſide theſe, a fine powder, made of three parts of double-refined ſugar, and one part of burnt alum, may be employed with advantage for the purpoſe of rubbing them. Sugar is an excellent antiſeptic; and IMBERT DE LONNES, a French Phyſician, reports, that a whole ſhip's company was once cured of an alarming ſcurvy, by living for ſome time, from neceſſity, upon ſugar alone.—We ſhould alſo conſider the connection ſubſiſting between the teeth and the ſtomach; if the former be unequal to the purpoſes of maſtication, the digeſtive powers

powers will be gradually impaired, and the ſoundeſt ſtomach corrupted. To neglect the teeth, therefore, is to neglect the ſtomach; and if the ſtomach be weakened, the whole maſs of the fluids, and particularly the blood, will ultimately be tainted with crude, unaſſimilated, and acrimonious humours.

To diſſolve and waſh away the ſuperfluous, ſlimy, and unctuous matters which produce the tartar, freſh water is ſufficient; or it may be rendered a little more acrid by the admixture of a ſmall quantity of common ſalt. Acids and alkalies, ſo frequently employed as dentifrices, are of too corroſive a nature; and alkalies in particular injure the gums, perhaps the teeth themſelves, while acids deprive them of their enamel, and thus occaſion a ſpeedy external corruption and inevitable gangrene within.

The moſt ſimple dentifrice is a cruſt of bread hard toaſted, and reduced to a fine powder. This is fully calculated to abſorb the viſcid, oleaginous particles, and to remove the ſtony or tartarous matter. The bread, however, ſhould not be toaſted too black, as in that caſe it would evolve an acrid alkaline ſalt, which might prove hurtful. A ſtill better dentifrice is a moderately fine powder of the Peruvian Bark, particularly of the genuine red ſpecies, which ſtrengthens the gums, without inflaming them.

In cleaning the teeth we ought not to make uſe of bruſhes or ſponges, but of the finger, which being

being provided with the fineſt papillary veſſels, is a much better and more proper inſtrument, and precludes the neceſſity of reſorting to artificial means. Beſides, the finger has the advantage of being ſoft and pliable, and of feeling any immoderate preſſure too ſenſibly, to permit us to do injury to the teeth or gums:—hence, it is an ill-judged delicacy alone, which can prevent us from making uſe of it, preferably to even the beſt tooth-bruſhes.

For cleaning the interſtices between the teeth, we ſhould not employ pins or needles, whether made of gold, ſilver, or ſteel; for all metallic ſubſtances are apt to canker the teeth. If toothpicks be at all adviſable, they ſhould be made of ſoft wood, or quills cut in a blunt point. In my own opinion, none ſhould be uſed; for, of whatever materials they are made, they open, looſen, and injure the teeth, by making room for the tartar and other matters, to prey upon the teeth and gums. To anſwer every purpoſe of toothpicks, a thick and ſoft cotton cloth ſhould be uſed, to rub the teeth over gently after every meal: but if people have once accuſtomed themſelves to regularly picking their teeth, then indeed the cotton frictions may perhaps be too late.

Laſtly, the cleaning and bruſhing of the teeth, however uſeful and neceſſary, is inſufficient to prevent the ſettling of the tartar, and the conſequent injury to the teeth; for the ſource of both evils does

does not exiſt in the mouth, but really proceeds from the ſtomach, and a corrupted ſtate of the fluids. For this reaſon, the medical treatment of the teeth requires a particular regimen and diet, according to the individual caſe of every patient.

Of the Uſe of Baths.

This important branch of dietetic regimen is of excellent uſe and efficacy, both in the cure and prevention of diſeaſes. Though the ancients could leſs diſpenſe with the uſe of the bath, on account of the frequency of their athletic exerciſes, as well as from the want of linen, which was then much leſs in uſe than at preſent, yet in our times, it would be of great ſervice, if the uſe of baths were more general and frequent, and this beneficial practice not confined to particular places or ſeaſons, as a mere matter of faſhion. Conſidered as a ſpecies of univerſal domeſtic remedy, as one which forms the baſis of cleanlineſs, bathing, in its different forms, may be pronounced one of the moſt extenſive and beneficial reſtorers of health and vigour. I am not ſo ſanguine, however, in my expectations, as to think that the cure of all maladies and diſeaſes may be effected by the bath, as was lately promiſed by a noted empiric in this country, who moſt ſagaciouſly impregnated his vapour baths with the collective produce of the vegetable

vegetable kingdom. Such a general remedy is juſt as chimerical as the moſt famous panaceas, the tincture of gold not excepted.

Bathing, whether in warm or cold water, produces the moſt ſalutary effect on the abſorbent veſſels; which would otherwiſe reconduct the impurities of the ſkin through the pores, to the no ſmall injury of health. To thoſe in a perfect ſtate of vigour, the frequent uſe of the bath is leſs neceſſary than to the infirm; as the healthy poſſeſs a greater power to reſiſt impurities, by means of their unimpaired perſpiration, the elaſticity of their minute veſſels, and the due conſiſtence of their circulating fluids. The caſe is very different with the infirm, the delicate, and the aged. In theſe, the ſlowneſs of circulation, the viſcidity or clammineſs of the fluids, the conſtant efforts of nature to propel the impurities towards the ſkin, combine to render the frequent waſhing of their bodies an eſſential requiſite to their phyſical exiſtence.

Baths, conſidered as the means of curing diſeaſes and reſtoring health, if judiciouſly applied, are likewiſe of peculiar advantage; and though, in this reſpect, they do not properly make part of a regular ſyſtem of dietetics, yet I ſhall requeſt the indulgence of the reader, while I make a few neceſſary remarks relative to the proper application of the bath, it being ſo frequently uſed as a mere dietetic remedy. Much depends on a clear

and accurate knowledge of the properties and effects of the different baths. I ſhall therefore divide them into two principal claſſes, the *warm* and the *cold* bath.

The *warm*, that is, the tepid or lukewarm bath, being about the temperature of the blood, between 96 and 98° of Fahrenheit, has uſually been conſidered as apt to weaken and relax the body; but this is certainly an ill-founded notion. It is only when its heat exceeds that of the human body, (as in the *Hot Bath* and *King's Bath* at BATH, both of which are from 18 to 20 degrees higher than blood-heat,) that the warm bath *can* produce a debilitating effect. Indeed, baths of the above immoderate heat ought not to be uſed in their natural ſtate, that is, without reducing their temperature by cold water, except in particular caſes, and under the immediate advice of a phyſician. On the contrary, the lukewarm or tepid bath, from 96 downwards to 85, is always ſafe; and is ſo far from relaxing the tone of the ſolids, that it may juſtly be conſidered as one of the moſt powerful and univerſal reſtoratives with which we are acquainted. Inſtead of heating the body, it has a cooling effect; it diminiſhes the quickneſs of the pulſe, and reduces it in a greater proportion, according as the pulſe has been more quick and unnatural, and according to the length of time the bath is continued. Hence tepid baths are of eminent ſervice, where the body has been over-

heated, from whatever cauſe, whether after fatigue from travelling, or ſevere bodily exerciſe, or after violent exertion and perturbation of mind; as they allay the tempeſtuous and irregular movements of the body, and conſequently, in the ſtricteſt ſenſe, invigorate the ſyſtem. By their ſoftening, moiſtening, and tumifying power, they greatly contribute to the formation and growth of the body of young perſons, and are of ſingular benefit to thoſe, in whom we perceive a tendency to arrive too early at the conſiſtence of a ſettled age; ſo that the warm bath is particularly adapted to prolong the ſtate of youth, and retard for ſome time the approach of full manhood. This effect the tepid baths produce in a manner exactly alike, in the coldeſt as well as in the hotteſt climates.

From what has been advanced, it will not be difficult to diſcover, in what particular diſorders the tepid bath may be of the greateſt ſervice, and the reaſon why they prove ſo eminently uſeful (particularly in a parched and rough ſtate of the ſkin) in paralytic, ſpaſmodic, bilious, conſumptive, hypochondriac, hyſteric, and infane caſes, as well as in an acrimonious and corrupted ſtate of the fluids, ſuch as ſcorbutic and leprous eruptions, lues, &c. One obvious effect of the habitual uſe of the bath, particularly the tepid, is, that it ſoftens and renews the external integuments of the body. It conſiderably increaſes the preſſure on the body from without; hence breathing, particularly on

entering the bath, is frequently ſomewhat difficult, until the muſcles have by practice become inured to a greater degree of reſiſtance. Yet this effect, which in moſt inſtances is of ſmall importance, requires the greateſt precaution in ſome particular caſes, ſo far as to prevent the uſe of the bath altogether; for inſtance, in perſons of a full habit, who are in danger of breaking ſome of the internal blood-veſſels, by the precipitate uſe of the bath, whether warm or cold.

Theſe few hints will be ſufficient to determine the caſes, in which the lukewarm bath may be reſorted to with ſafety and advantage, as a *dietetical* remedy. Its application in the treatment of diſeaſes is foreign to the object of this Chapter, and demands the moſt minute inquiry into the nature of the caſes which indicate the uſe of it, as it is of itſelf a potent remedy, which, if improperly uſed, may produce a contrary effect.

Bathing in rivers, as well as in the ſea, is effectual for every purpoſe of cleaning the body; it waſhes away impurities from the ſurface, opens the cutaneous veſſels for a due perſpiration, and increaſes the activity of the circulation of the blood. For theſe reaſons, it cannot be too much recommended, not only to the infirm and debilitated, under certain reſtrictions, but likewiſe to the healthy. The apprehenſion of bad conſequences from the coldneſs of the water, is in reality ill-founded; for, beſides that it produces a ſtrengthening effect, by its aſtringent

aſtringent property, the cold ſenſation is not of itſelf hurtful.

The ſame precaution, however, is requiſite in the uſe of the cold as that of the tepid bath; for after having overheated the body, eſpecially in the hot days of ſummer, it may prove inſtantly fatal, by inducing a ſtate of apoplexy. Hence the plethoric, the aſthmatic, and all thoſe who perceive a great determination of the blood to the head, ſhould be very circumſpect in its uſe. For, although the conſequence may not prove immediately fatal, yet the too great ſtrain and preſſure may eaſily burſt ſome of the ſmaller blood-veſſels in the head or breaſt, and thereby lay the foundation of an incurable diſorder. To ſuch as are of a ſound and robuſt conſtitution, bathing may be rendered an agreeable exerciſe by ſwimming againſt the ſtream; for, the fibres and veſſels being obliged to reſiſt the power of the undulating waves, the nerves are thereby excited into action.

Before I proceed to lay down dietetical rules for the uſe of the bath, I ſhall premiſe a brief hiſtorical narrative of this excellent practice, and generally explain its ſenſible effects.

Among the Greeks, and particularly the Spartans, bathing was not entruſted to the caprice of individuals, but conſidered as a public inſtitution, being governed and arranged agreeably to the expreſs laws of the State.—We learn alſo from ſacred hiſtory, that among the Jews, at a much

earlier period, perſons under certain circumſtances were pronounced unclean, and conſequently unfit to hold any intercourſe or communion with others, until they had performed the appointed ablutions. The Greeks, according to their own hiſtorians, learnt this practice from the Egyptians, and the Romans from the Greeks. With thoſe celebrated nations, public and private baths formed an important branch of uſeful and ornamental architecture. Many opulent individuals courted the favour of the people, by laviſhing their treaſures in the eſtabliſhment and decoration of public baths; and to this day we frequently diſcover the valuable remains of theſe national edifices. Among the Romans, the baths were in time converted into regular and luxurious dwelling-places, in which the ſons of the patricians and of the wealthy were educated; a circumſtance ſufficiently aſcertained in the hiſtory of CHARLES the Great.

The changes, which the contact of cold water produces on the body, naturally lead us to inquire into the phyſical nature and properties of the cold bath. The lighteſt water is at leaſt 800 times heavier than air; from which it has been concluded, that the former preſſes upon the human body with a force proportionally great. If therefore the column of air, which preſſes upon our body with a force equal to 39,900 lb. could be converted into water, the whole weight of that preſſure would amount to 31,920,000 lb. Yet, as our health is

affected

affected by a difference in the preſſure of the air, occaſionally varying from 3 to 4000 lb., we may eaſily underſtand, that the human body is not calculated to ſuſtain, for any length of time, the great preſſure of water. From this cauſe, the moſt experienced negro divers dare not venture beyond a certain depth of the ſea; well knowing it would be impoſſible to riſe up againſt the additional weight of water incumbent upon their bodies.

The ſenſible *properties* of the *Cold Bath*, in general, conſiſt in its power of contracting the ſolid parts, and of inſpiſſating the fluids. Any part of the body, which is expoſed to the ſudden contact of cold water, experiences at the ſame inſtant a degree of tenſion and contraction, and becomes narrower and ſmaller. Not only the blood-veſſels, but likewiſe the ſmall capillary tubes, are liable to this contraction and ſubſequent relaxation. What is vulgarly called *gooſe-ſkin* is an effort of the cutaneous fibres, a contraction of the orifices of the abſorbent and exhalant veſſels, occaſioned by mental perturbation, ſpaſms, or the effect of cold. —Hence it happens, that by the cold bath all the blood-veſſels of the ſkin, and of the muſcles in immediate contact with it, are ſo conſtricted and diminiſhed, that at the time of this violent exertion they are unable to receive the uſual quantity of blood. The ſmaller veſſels of the ſkin are likewiſe cloſed, and preſs upon the humours contained

in them, ſo as to prevent all perſpiration during this preſſure. Thus all the fibres of the ſkin and muſcles are brought into cloſe contact; and if the humours contained in theſe tubes had no other outlets, by which to diſcharge themſelves, they would become thick or inſpiſſated, and loſe their natural warmth. Were this inſpiſſation of the fluids really to take place, it would be attended with dangerous ſtagnations and obſtructions. That it does not, however, produce theſe fatal effects, may be aſcribed to the following cauſe. As ſoon as the preſſure is made againſt the external veſſels, the blood retreats from them, in ſearch of places where it may find leſs reſiſtance. All the great veſſels within the body afford receptacles, into which it now flows, till the principal arteries, and the veins of the inteſtines, being filled, extended, and enlarged, it riſes to the heart. Although the effect conſequent on the cold bath may be conſidered as altogether mechanical, yet this ſimple operation is frequently productive of the moſt important and beneficial effects.

All other ſtrengthening remedies, operating, in general, only on the fluid parts of the body, require to be previouſly diſſolved by the fluids, blended with the maſs of blood, and thereby conducted to the ſolid parts. The cold bath, on the contrary, acts almoſt inſtantaneouſly on the ſolid parts themſelves, and produces its bracing effect, before a ſingle drop of blood has been commuted.

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From which remedy, therefore, is it moſt likely we ſhould derive the deſired effect, that which immediately anſwers the purpoſe, or that which muſt paſs through ſo many canals, and undergo ſo many changes, before it arrives at the place where it is to exert its efficacy?—The ſudden changes ariſing from the application of the cold bath contribute in various ways to brace the human body. The relaxed fibres of the ſkin and the muſcles, acquire more ſolidity and compactneſs from contraction. Their elaſticity is increaſed, and thus a conſiderable defect removed: the nerves are ſtimulated and incited to thoſe powerful exertions, on which the eaſe, vigour, and habitual ſprightlineſs of the body ſo much depend. From that degree of irritability which the nerves poſſeſs, when in a debilitated ſtate, ariſe all hyſteric, ſpaſmodic, and convulſive ſymptoms and affections. Theſe may be mitigated or removed by the cold bath; becauſe it greatly affects and alters the ſtate of the nerves; it ſhakes and animates them, and by its forcible operation overcomes their tendency to preternatural rigidity and other diſagreeable ſenſations. Here then we have two cauſes, which illuſtrate the excellent effects of this remedy;—there remains, however, a third, more important and powerful, yet to be explained.

The blood, which by external preſſure is driven into the internal veſſels, extends and enlarges them, without diminiſhing that contractile force or ten-

dency which is peculiar to every artery. At the moment when the external preſſure ceaſes, all the internal veſſels exert their powers of ſelf-contraction more forcibly than uſual, as they are more ſtrongly extended, and conſequently enabled to exerciſe a greater force. The blood returned to the cutaneous and muſcular veſſels, finds its reſervoirs contracted and invigorated; it flows through muſcles, the fibres of which have acquired greater elaſticity and power of reſiſtance. It is accelerated in its new motion by theſe improved fibres and veins, and the reſult of the collective powers is a freſh impulſe and rapidity given to its circulation. Although, at the firſt immerſion, the uniform courſe of it is ſomewhat interrupted, this temporary ſtoppage ſerves afterwards to re-eſtabliſh and promote it. The blood can now penetrate with eaſe into the ſmalleſt capillary veſſels; and it can circulate freely through every part of the animal machine, without affecting or relaxing the ſolids *.

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* Such are the advantages which the theory of bathing holds out. I ſhall, however, quote a reſpectable authority, which may be of uſe to remove ſome erroneous notions hitherto very prevalent, in the practice of cold-bathing.

" In the earlier ſtages of exerciſe, (ſays Dr. CURRIE, of *Liverpool*,) before profuſe perſpiration has diſſipated the " heat, and fatigue debilitated the living power, nothing " is more ſafe, according to my experience, than the cold " bath. This is ſo true, that I have for ſome years con- " ſtantly directed infirm perſons to uſe ſuch a degree of ex- " erciſe,

The healthy and the vigorous, who reſort to the cold bath, on account of its cleanſing and bracing effects,

" erciſe, before immerſion, as may produce ſome increaſed " action of the vaſcular ſyſtem, with ſome increaſe of heat, " and thus ſecure a force of reaction under the ſhock, which " otherwiſe might not always take place. The popular " opinion, that it is ſafeſt to go perfectly cool into the water, " is founded on erroneous notions, and ſometimes produc- " tive of injurious conſequences. Thus perſons heated and " beginning to perſpire often think it neceſſary to wait on " the edge of the bath, until they are perfectly cooled, and " then plunging into the water, feel a ſudden chilline's that " is alarming and dangerous. In ſuch caſes the injury is " generally imputed to going into the water too warm, " whereas in truth it ariſes from going in too cold.

" But though it be perfectly ſafe to go into the cold bath " in the earlier ſtages of exerciſe, nothing is more dangerous " than this practice, after exerciſe has produced profuſe " perſpiration, and terminated in languor and fatigue; " becauſe in ſuch circumſtances the heat is not only ſinking " rapidly, but the ſyſtem parts more eaſily with the portion " that remains.

" In his Eſſay on Swimming, FRANKLIN makes the fol- " lowing obſervation :—' *During the great heats of ſummer,* ' *there is no danger in bathing, however warm we may be, in* ' *rivers which have been thoroughly warmed by the ſun. But to* ' *throw ourſelves into cold ſpring water, when the body has been* ' *heated by exerciſe in the ſun, is an imprudence which may prove* ' *fatal. I once knew an inſtance of four young men who, having* ' *worked at harveſt in the heat of the day, with a view of refreſh-* ' *ing themſelves, plunged into a ſpring of cold water; two died on* ' *the ſpot, a third the next morning, and the fourth recovered with* ' *great difficulty.*' The authority of the American Bacon " is of great weight in Medicine, as in every branch of " ſcience, and particularly in what reſpects immerſion in

" water;

effects, may continue in it, with ſafety, for a conſiderable time. But to ſtrengthen and to give elaſticity to the ſolid parts, every thing depends upon the ſudden impreſſion of the cold. This primary effect will be weakened or fruſtrated by remaining in the bath till the water feels warm, whereby the preſſing or vibrating action on the nerves at length ceaſes. The moſt proper time of bathing is, when the ſtomach is not employed in digeſtion; as in the morning or forenoon, or from three to four hours after dinner.

The cold bath, between 65 and 32° of Fahrenheit, is not, ſtrictly ſpeaking, a dietetic remedy;—its

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" water; for doubtleſs he ſpent more time in this element, " than any philoſopher of modern days. It may, however, " be eaſily ſuppoſed, that he adopted the commonly-" received opinion, that the injury aroſe from the perſons " in queſtion going in *when hot*, inſtead of from going in *when* " *cooling, after having been heated*; to which laſt circumſtance " it can hardly be doubted, that the fatal accident he relates " was to be imputed."

Theſe remarks are worthy of the learned Dr. Currie;—at the ſame time, inſtead of adviſing any perſon to uſe the *cold bath* after exerciſe, I would certainly prefer the *tepid* or *lukewarm bath*, both on account of the greater ſafety attending the uſe of it, and becauſe it poſſeſſes nearly all the advantages of the cold bath, without being liable to ſo many ſtrong objections. Beſides, the cold bath is altogether improper in a weak ſtate of the lungs, in all complaints of the breaſt, in dropſies, in plethoric habits, and for very corpulent individuals; in all which caſes the lukewarm bath may, if duly modified, produce effects highly beneficial.

effects

effects are not ſo much calculated for the healthy and robuſt, as for the infirm and diſeaſed, under peculiar circumſtances. The external uſe of cold water is of ſingular benefit, when applied to particular parts of the body, where its uſe may be much longer continued without danger, and where we may accompliſh the intended effects, in a manner by compulſion and perſeverance.

Of all the parts of the body, the head receives moſt benefit from the affuſion of cold water; this is a ſimple and effectual remedy againſt too great an impulſe of the blood towards the head, where perſons are threatened with apoplexy; in diſorders of the brain and cranium; in wounds and other complaints, to which the head is ſubject. In theſe inſtances, its effects may be ſtill farther improved by frigorific or cooling ſalts. The affuſion of water upon the abdomen has likewiſe been employed with great advantage, in caſes of obſtinate coſtiveneſs, affording almoſt inſtantaneous relief, when internal remedies have produced no effect. This ſhould not, however, induce any perſon to try that remedy indiſcriminately, or without proper advice.

On the contrary, in all thoſe caſes where the cold bath might repel certain eruptive humours, which Nature determines towards the ſurface of the body, it cannot be reſorted to without danger. Apoplexies have been the frequent conſequences of an unwary uſe of the cold bath; more frequent, indeed,

indeed, than is generally ſuſpected. And yet the popular opinion ſtill prevalent, is, that there can be no better practice, than to plunge into the cold bath at all times, and in all ſtates of the body, in order to ſtrengthen the nerves. Children, in particular, are indiſcriminately accuſtomed to it from their infancy, to reſtore them to that degree of bodily vigour, for which our anceſtors were ſo famed. That many children, by the daily practice of bathing them in cold water, grow and continue healthy and ſtrong, proves as little, as that many infants become vigorous and robuſt in the moſt unwholeſome climates, and under the moſt unfavourable management.—Some think to fortify the body, by the uſe of the cold bath, againſt the viciſſitudes of the weather; but it can be proved that children, who from their infancy have been bathed in cold water, are as much expoſed to coughs and catarrhs, as thoſe who have not been habituated to this violent practice, provided they have not been miſmanaged by effeminating indulgence. In general, all artificial plans of hardening and bracing the bodies of children, are commendable only, when the child ſhows no ſtrong and laſting averſion to them.

It ſhould be conſidered that, as the cold bath powerfully contracts the fibres by its frequent uſe, it imparts to the juvenile body an unnatural degree of ſolidity and compactneſs, whereby it too early acquires the properties of an adult. The ſkin of ſuch

ſuch children as have been too frequently bathed, is generally much drier and harder than it ought to be at their age. It is a remark of GALEN, that the cold bath does not agree with a growing perſon, and he adviſes young people not to bathe at all, till the body be completely formed. Is it not inconſiſtent, that by cold-bathing we expect to bring the body of youth to the vigour of age, and that afterwards, when age approaches, we ſhould wiſh to render it ſofter, and reſtore its energy, by lukewarm bathing? Hence the cold bath, for the purpoſe of ſtrengthening children, muſt ever be conſidered as a doubtful remedy.

We now proceed to lay down ſome rules for the uſe of the cold bath, in the caſes where it may be of ſervice. 1ſt, Every cold bath applied to the whole body ought to be of ſhort duration; all depends upon the firſt impreſſion the cold makes on the ſkin and nerves, it being this impreſſion which hardens us againſt the effects of rough and cold weather:—2d, The head ſhould be always firſt wetted, either by immerſion, or by pouring water upon it, or the application of wet cloths, and then plunging over head into the bath:—3d, The immerſion ought always to be ſudden, not only becauſe it is leſs felt than when we enter the bath ſlowly and timorouſly, but likewiſe becauſe the effect of the firſt impreſſion is uniform all over the body, and the blood in this manner is not driven from the lower to the upper

parts. Hence the Shower Bath poſſeſſes great advantages, as it pours the water ſuddenly upon the whole body, and thus in the moſt perfect manner fulfils the three rules above ſpecified:—4th, The due temperature of the cold bath can be aſcertained only in relation to individual caſes: as it extends from 33 to 56° of Fahrenheit, except in *partial* bathings, where, as has been already obſerved, the degree of cold may, and often ought to be, increaſed by ice, nitre, alum, ſalt, ſal ammoniac, or other artificial means:—5th, Gentle exerciſe ought to precede the cold bath, to produce ſome reaction of the vaſcular ſyſtem in entering into it; for neither complete reſt nor violent exerciſe are proper, previous to the uſe of this remedy:—6th, The morning or forenoon is the moſt proper time for cold-bathing, unleſs it be in a river,—then the afternoon or towards the evening, when the water has been warmed by the ſun, and the dinner has been digeſted, are the moſt eligible periods of the day: a light breakfaſt will not be detrimental before uſing the bath:—7th, While in the water, we ſhould not remain inactive, but move about, in order to promote the circulation of the blood from the centre of the body to the extremities:—8th, After immerſion, the whole body ought to be wiped, as quickly as poſſible, with a dry and ſomewhat rough cloth. Moderate exerciſe out of doors, if convenient, is proper, and indeed neceſſary.

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To ſpecify the various ſituations, in which the cold bath may be uſed with perfect ſafety and advantage, would lead me too far, and does not belong, ſtrictly ſpeaking, to the ſubject of this book. I ſhall, however, enumerate generally certain caſes, in which we muſt abſolutely refrain from the cold bath. 1. In a general plethora or full habit of body, and in the febrile diſpoſition which attends it; in hemorrhages or fluxes of blood, and in every kind of inflammation. 2. In conſtipations or obſtructions of the abdominal inteſtines. 3. In diſeaſes of the breaſt, difficult breathing, and ſhort and dry coughs. 4. In an acrimonious ſtate of the fluids, bad colour of the face, difficult healing of the fleſh, and the ſcurvy, properly ſo called. 5. In gouty and rheumatic paroxyſms. 6. In cutaneous diſeaſes. 7. In a ſtate of pregnancy. And laſtly, 8. In a deformed or ill-ſhaped ſtate of the body, except in ſome particular caſes to be determined by a phyſician.

The beſt method of cold bathing is in the ſea or a river. Where, from neceſſity, it is done in the houſe, I recommend the *Shower Bath*, for which a proper apparatus is to be had at the tinman's. Where the ſaving of expence is an object, it may be effectually ſupplied by the following eaſy expedient: Fill a common watering-pot with cold water, let the patient ſit down undreſſed upon a ſtool, which may be placed in a large tub; and let the hair, if not cut ſhort, be ſpread over the ſhoulders as looſely as

poſſible; then pour the water from the pot over the patient's head, face, neck, ſhoulders, and all parts of the body progreſſively down to the feet, till the whole has been thoroughly bathed. Let the patient then be rubbed dry, and take gentle exerciſe, as has been already recommended, until the ſenſation of cold be ſucceeded by a gentle glow all over him. When we firſt reſort to this kind of bath, it may be uſed gently, and with water having ſome degree of warmth, ſo as not to make the ſhock too great; but, as the patient becomes accuſtomed to it, the degree of cold may be increaſed, the water may be allowed to fall from a greater height, and the holes in the pan may be made larger, ſo as to make the ſhower heavier. A large ſponge may, in ſome meaſure, be ſubſtituted for a watering-pot.

Although the Shower Bath does not cover the ſurface of the body ſo univerſally as the uſual cold baths, this circumſtance is rather favourable than otherwiſe: for thoſe parts, which the water has not touched, feel the impreſſion by ſympathy, as much as thoſe in actual contact with it. Every drop of water becomes a partial cold bath in miniature, and thus a ſtronger impreſſion is excited than in any other mode of bathing. The Shower Bath, for the following reaſons, poſſeſſes advantages ſuperior to all others. 1. The ſudden contact of the water, which in the common bath is only momentary, may here be prolonged, repeated, and made ſlow or quick, or modified

modified at pleaſure. 2. The head and breaſt, which are expoſed to ſome inconvenience and danger in the common bath, are here at once ſecured, by receiving the firſt ſhock of the water; the blood is conſequently impelled to the lower parts of the body; and the patient finds no obſtruction in breathing, or undulations of blood towards the head. 3. The heavy preſſure on the body occaſioned by the weight of the water, and the free circulation of the blood in the parts touched by it, being, for ſome time at leaſt, interrupted, make the uſual way of bathing often more detrimental than uſeful. The Shower Bath, on the contrary, deſcends in ſingle drops, which are at once more ſtimulating and pleaſant than the immerſion into cold water, and it can be more readily procured, and more eaſily modified and adapted to the circumſtances of the patient.

I ſhall conclude this Chapter with ſome account of what is called the *Aërial* or *Air Bath*. This is a late invention, the effects of which have not yet been ſufficiently aſcertained. Experience informs us, that by expoſing the naked body for a ſhort time to an agreeably cool, nay to a cold air, we perceive effects ſomewhat ſimilar to thoſe produced by the cold bath; particularly that of a pleaſant ſenſation of heat diffuſed over the whole body, after having again dreſſed. There is little danger of catching cold upon this occaſion: for in a place

where we already feel a certain degree of cold in our uſual dreſs, the ſenſation of it will not be much increaſed, if we undreſs altogether. It may alſo be remarked, that with the *whole* body naked, we have much leſs to apprehend from the effects of cold, than by expoſing or keeping one part of it leſs covered than another *.

This ſpecies of bath certainly deſerves farther trials. A ſpacious apartment, with open windows, may ſerve every purpoſe of moving in the free air. And here I would recommend to all who are engaged in ſedentary and literary purſuits, to walk with their heads uncovered in an open, and even in the coldeſt air, as being a ſimple and excellent means to ſtrengthen the head, and to remove thoſe complaints which ariſe from intenſe thought and cloſe mental application.

To rub the body with woollen cloths, or with ſoft bruſhes, is of great advantage, by gently ſti-

* *Lord Monboddo*, the author of "*Ancient Metaphyſics*," who died in May 1799, in his 90th year, till very lately accuſtomed himſelf to take violent exerciſe, when quite undreſſed, in the open air. He alſo anointed his body, like the ancients, with aromatic oils, eſpecially in certain ſtates of the atmoſphere: in the ſevereſt weather he never would enter a carriage, which he looked upon as an unjuſtifiable effeminacy; but annually rode from Edinburgh to London, and took other long journies on horſeback. And this venerable judge and amiable man found himſelf, long after the age of 70, as hale, and, in many reſpects, as vigorous, as he had been at 30 or 40.

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mulating the fibres, increaſing the circulation of the fluids to the external parts, and promoting a free perſpiration, together with all the other evacuations. Perſons of a delicate habit, of a ſedentary life, and thoſe who are liable to ſudden twitches of the tendons, cramps, and lameneſs, may effectually relieve, or rather prevent theſe complaints, by cauſing the whole body, particularly the limbs, to be rubbed every morning and evening, for about half an hour, with rough cloths or ſoft bruſhes, till the ſkin becomes red. This friction is ſtill more beneficial to the aged than to the young; and it may in a great meaſure produce the ſalutary effects of bodily exerciſe.

Frequent cutting the hair is of advantage to the eyes, the ears, and to the whole body. So the daily waſhing of the head with cold water, is an excellent remedy againſt periodical head-achs. In coryzas, or defluxions of the humours from the head, and in weak eyes, the ſhaving of the head often affords immediate relief; while at the ſame time it opens the pores, and promotes perſpiration. It is altogether a miſtaken idea, that there is a danger of catching cold from the practice of waſhing the head, or leaving it expoſed to the free air, after having been waſhed. The more frequently the ſurface is cleanſed of ſcurvy and ſcaly impurities, the more eaſy and comfortable we feel. The oftener the hair is cut, the

more quickly it grows again; and this eaſy operation ſupplies the place of a conſtant bliſter or artificial iſſue *.

Friction of the ſoles of the feet is very advantageous; but, on account of the great number of highly ſenſible nerves in them, ſuch practice muſt not be carried to exceſs. A proper degree of warmth and perſpiration in the feet is always a favourable ſymptom of health. Beſides, they ſhould often be bathed in cold, or ſtill better, in lukewarm water, well rubbed, and the nails cautiouſly cut. There will then be no danger of the nails growing into the fleſh, or of corns or other calloſities ariſing in the feet. All the methods hitherto diſcovered of extracting corns afford only *temporary* eaſe; and it is very dangerous to cut them too deep, on account of the

* All ſecret compoſitions or pomatums for making the hair grow long and thick, are little better than fraud and impoſition, and generally conſiſt of noxious ingredients. In place of them I recommend a ſimple mixture of olive-oil and ſpirits of roſemary; to which may be added a few drops of oil of nutmeg. With this mixture let the hair be anointed every night; but ſparingly at firſt.

To change the hair to a darker colour, the liquid remedies ſold by the perfumers are generally dangerous, as conſiſting of lead, antimony, and other metallic ſolutions. The only method to be purſued with ſafety is, to cut the hair pretty cloſe to the head, and comb it morning and evening with a leaden comb, which ſimple proceſs cannot injure or check the perſpiration of the head.

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many nerves running in every direction of the toes. Eaſy ſhoes, frequent bathing the feet in lukewarm water, with a little ſalt and pot-aſhes diſſolved in it, and a plaſter made of equal parts of Gum Galbanum, Saffron, and Camphor, are the only remedies I can recommend againſt this troubleſome complaint.

CHAP. IV.

Of DRESS;—*the advantages and diſadvantages of the uſual mode of Clothing conſidered, together with propoſals for remedying its defects.*

IN conſidering the various articles of Dreſs, attention muſt be paid both to their *ſubſtance* and *form*. Our mode of clothing may occaſion trouble, diſeaſe, and death — 1. When we attempt by it to improve ſome ſuppoſed defects of the body, which cannot be done without injury; and, 2. When it conſiſts of improper ſubſtances, whether uſed from neceſſity, or in compliance with faſhion and caprice.

To avoid ridicule, we comply with the prevailing faſhions of the day; but, if this compliance be prejudicial to health, it ſhows great weakneſs to allow ourſelves to be carried away with the ſtream; and although a deviation from the mode may, for the moment, excite the ridicule of the thoughtleſs, yet thoſe who have the boldneſs to oppoſe the Tyrant, when his dictatorial mandates are injurious to health, will in the end triumph, and they may themſelves have the ſatisfaction to introduce dreſſes, at once healthful and elegant. Happily, in

in this reſpect, people begin in ſome degree to think for themſelves; that rigid adherence to the mode, which heretofore dreſſed both men and women, as much in uniform ſuits as a regiment of ſoldiers, does not now diſguſt us.

The general properties of a good dreſs are the three following:—1. That it be not ſo hard and unpliable, as to obſtruct the free and eaſy motion of the joints, and be uncomfortable, either from its weight or tightneſs.—2. That it preſerve the body in that degree of temperature which is moſt agreeable, as well as moſt ſuitable to the different functions and motions in a healthy ſtate;—and, 3. That it do not produce any detrimental effects, by increaſing perſpiration in an unneceſſary degree, or too much abſorbing the vapours of the atmoſphere.

On the Materials uſed for Articles of Dreſs.

The property of receiving, repelling, and emitting heat and cold, depends not only on the ſubſtance from which our dreſs is made, and its ſhape or form, but alſo on the colour. Clothes of a light colour have the leaſt attraction for heat, and therefore are the moſt proper in hot weather. Subſtances of a very ſmooth and ſhining ſurface ſtrongly reflect the rays of the ſun, which cannot penetrate through them; hence the advantage, in hot climates, of hats covered with oil-ſkin, particularly

of a green or white colour, of ſmooth and ſhining ſhoes, glazed gowns, and the like. Dazzling colours are offenſive, and a perſon who ſuffers from weak eyes will injure them ſtill more by wearing crimſon or ſcarlet, or being much in company with others thus dreſſed. For a ſimilar reaſon, ſplendid white dreſſes, ſteel buttons, gold and ſilver lace, and all ornaments of this ſort, are detrimental to viſion.

Animal Wool produces a moderate warmth, on account of the ſtimulus and gentle friction it occaſions on the ſkin. By its uſe, animal electricity is elicited, perſpiration promoted, the perſpired humours are abſorbed, and again eaſily evaporated, on account of the porous nature of this ſubſtance.

Linen Cloth, by diminiſhing the elaſticity of the ſkin, increaſes the internal warmth, and at the ſame time, from its compactneſs, retains too readily the perſpirable humours, and does not part with them ſo readily as wool. Soiled ſhirts therefore produce a diſagreeable cooling ſenſation, and ſtop perſpiration, eſpecially if made of thick ſtrong cloth, and not regularly changed every day.

Silk occaſions a gentle ſtimulus, but does not ſufficiently promote perſpiration, though it attracts leſs humidity from the atmoſphere than linen.

Oil-ſkin, or wax-cloth, increaſes perſpiration in an uncommon degree, but does not admit it to evaporate again, and is therefore applicable only in certain diſeaſes.

Cotton

Cotton ſtands in the middle between animal wool and linen; it increaſes warmth and perſpiration, imbibes and retains the perſpired humours, to the injury of the wearer, and like wool readily attracts infectious matter.

All kinds of *Fur* are more noxious than uſeful, both with reſpect to their ſtructure and conſtituent parts. They contain many alkaline and oily particles; they are generally too compact and unequal on the ſurface; they too much ſtimulate and increaſe perſpiration, by promoting the acceſs of humours to the ſkin; they do not allow the perſpirable matter to eſcape, ſoon acquire an intolerable ſmell, and more than any other ſubſtance attract and retain contagious effluvia. Experience informs us, that nations who dreſs in fur, particularly in hot countries, are frequently expoſed to diſeaſes, owing to a want of cleanlineſs and free perſpiration; ſuch are the putrid fevers of Hungary, the plague among the Turks, and the ſingular diſeaſe of the hair in Poland, called *plica polonica*, which curls the whole hair into a number of twiſts, that have the appearance of ſo many greaſy ſtrings, and afford a ghaſtly ſpectacle.

We ought, therefore, to chooſe a dreſs agreeable to the ſeaſon and weather, as well as to the conſtitution of the body. Woollen clothes are the moſt proper in ſpring, autumn, and winter; becauſe they moderately warm the body, do not weaken it by the abſtraction of too many exhalations, and

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have the feweſt points of contact, or, in other words, do not attach ſo cloſe to the body, as any other materials of dreſs.

In ſummer, moſt people are accuſtomed to wear thin clothes, which are ſcarcely proper in our changeable climate. It is not, in that ſeaſon, adviſable to take much exerciſe in thin dreſſes, particularly in the heat of the day. Nor ſhould we venture to wear ſuch clothes early in the morning, when the air is cool, and the pores of the ſkin have been dilated by the warmth of the bed;—but ſtill leſs in the evening, when the heat of the day has ſo much opened them, that perſpiration may be eaſily checked, and health materially injured.

In our variable climate, it would be preferable to adopt a ſpecies of dreſs, which is nearly uniform in all ſeaſons; for as thin clothes are more immediately pervaded by heat, during the leaſt exerciſe, it certainly would be more prudent and rational to wear a dreſs that is calculated to withſtand the effects both of cold and heat. That there is no danger in adopting a general dreſs for all ſeaſons; that, on the contrary, it is the moſt beneficial plan of managing the body, with regard to the moſt important function, namely that of perſpiration, I ſhall endeavour to prove in the next Section.

On the immediate Covering of the Skin.

The firſt and principal rule with reſpect to this ſubject is, that *the covering of the ſkin ought to be always the ſame, and not be changed according to the ſeaſon and the weather.* The uſual conſequence of this change is, in the firſt place, an uneaſy and painful ſenſation. A ſkin accuſtomed to fine linen only, cannot endure the ſenſation occaſioned by a coarſer kind; and cotton is ſtill more diſagreeable, but, moſt of all, animal wool or flannel. In the next place, to change the dreſs according to the weather, occupies more time, and requires more expence, than is convenient to the great maſs of the people.

Nevertheleſs, there are many who, from miſtaken maxims of health, accommodate the covering of their ſkins to the ſeaſons: they dreſs themſelves in winter in flannel, towards ſpring and autumn in cotton, and in ſummer in linen; a method as abſurd as it is dangerous. Notwithſtanding the difficulties, which each of theſe changes muſt produce, while we undergo this new trial on our ſkin, we expoſe ourſelves at the ſame time, in every ſuch change, to all poſſible dangers ariſing from cold and repelled perſpiration. This cuſtom is the more dangerous, as it is uſually practiſed by the infirm, the tender, and the aged, who regulate themſelves leſs by the temperature of the weather,

ther, than by the days of the almanack, when they are periodically accuſtomed to change their dreſſes.

The queſtion then, which is the *moſt proper covering of the ſkin*, is eaſily anſwered. *Animal wool* ſeems to recommend itſelf to us by the very circumſtance, that hair is the general covering of thoſe animals which moſt reſemble man in their ſtructure. If men were habituated to go naked in the colder climates, the human body would, no doubt, alſo be better covered with hair. Animals, in winter as well as in ſummer, have the ſame coat, except that in the coldeſt ſeaſon their hair is uniformly ſomewhat thicker and longer, conſequently alſo warmer than in ſummer, eſpecially in the northern countries.

Not only analogy, but experience alſo proves, that wool worn next the ſkin has indiſputable advantages over all other ſubſtances. For, 1. Flannel is but a ſlow conductor of *external* heat to the body, and it the more eaſily attracts *internal* heat, and allows it to evaporate the more readily, as it is more porous than any other texture. 2. A ſultry atmoſphere is extremely troubleſome, particularly where great heat is combined with moiſture, the humidity checking perſpiration, and at the ſame time conducting too many aqueous particles to the abſorbent veſſels from without. Here then flannel is of incomparable ſervice, ſince

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it keeps the veſſels of the ſkin conſtantly open, cauſes them to perſpire freely, and admits but a very ſmall degree of external moiſture.

The principal good effect of flannel, however, conſiſts in its gentle and beneficial ſtimulus, or that friction which it occaſions on the ſkin, and by which it opens the pores. We muſt not imagine, that flannel *of itſelf* heats more than linen or cotton; for it is not the heat which occaſions inconvenience, but the circumſtance of the perſpirable matter adhering to the ſkin. In flannel, we may perſpire without danger, and undertake any exerciſe of the body, without diſagreeable ſenſations; not ſo, when linen remains wet on the ſkin. If we take violent exerciſe in flannel, perſpiration is neceſſarily increaſed, but the perſpired matter is communicated through the flannel to the atmoſphere, and the ſkin remains dry, warm, and comfortable. If we take the ſame exerciſe in linen ſhirts, perſpiration is indeed alſo increaſed, but the perſpired matter is not imparted to the atmoſphere, but is inſpiſſated in a fluid ſtate, clogs the linen, and remains in contact with the ſkin.

Another advantage which flannel poſſeſſes over linen and cotton is, that people perſpiring profuſely in flannel ſhirts, may ſafely venture into the open air, and will not eaſily catch cold, becauſe flannel does not abſorb the perſpired humours. If we do the ſame in linen ſhirts, the ſkin will ſoon be wetted by perſpiration, which will occaſion a

ſenſation of coolneſs and ſhivering; in moſt caſes a violent cold, and very frequently an inflammation of the lungs, will be the conſequence. This danger ariſes from the fluid matter ſettling on the ſkin; and we may be ſtill more ſeverely injured, if we at the ſame time expoſe ourſelves to the action of the wind, or a current of air.

Numberleſs writers, both ancient and modern, confirm the good effects of flannel next the ſkin: of theſe I ſhall only quote COUNT RUMFORD, who ſays, in one of his earlier Eſſays, that he is convinced of the utility of flannel ſhirts in all ſeaſons; that he has worn them in all climates, in the warmeſt apartments, and in the moſt fatiguing exerciſe, without the leaſt difficulty; that he was relieved, by the uſe of flannel, from a pain in his breaſt he had been frequently ſubject to, and never ſince knew an hour's illneſs; and that nothing exceeds the agreeable ſenſation of this dreſs, when people have been once accuſtomed to it.

Indeed after the praiſes beſtowed upon flannel, by ſo many reſpectable authorities, and by men who from long experience have aſcertained its beneficial effects, it is ſurpriſing, that any individual, however great his reputation, ſhould be whimſical or hardy enough to diſpute its *general* ſalubrity, merely with a view to eſtabliſh a favourite hypotheſis.

It has been objected, that flannel worn next the ſkin is debilitating, becauſe it too much increaſes

perſpiration; but this is not founded on truth, ſince perſpiration, *as long as the ſkin remains dry*, never can be hurtful, nor immoderate. Such miſtaken notions have been propagated, from the circumſtance, that flannel is frequently ordered by phyſicians, to increaſe perſpiration in ſome diſeaſes, where it is neceſſary to the recovery of the patient: *but the copious perſpiration is then the effect of the diſeaſe, and not of the flannel.*

The uneaſy ſenſation occaſioned by flannel is of very ſhort duration. That it may make the ſkin red and inflamed, if it be too much rubbed and ſcratched, cannot be denied; but it is a palpable falſity that it produces cutaneous eruptions. It has quite a contrary effect; as it preſerves the pores open, increaſes perſpiration, and thus removes the cauſe of cutaneous diſeaſes, which ariſe chiefly from a checked and irregular ſtate of excretion by the pores.

In anſwer to another objection againſt the wearing of flannel, it is certain, that a flannel ſhirt or waiſtcoat may preſerve the body as clean, and much cleaner, than linen, *if as frequently changed* *.

Wool,

* This preliminary condition, I preſume, ſufficiently anſwers the objection of a learned writer, according to whom a flannel dreſs requires a more frequent change than linen, *to promote cleanlineſs*, and conſequently would produce a contrary effect among the lower claſſes of people. Yet, in other reſpects, I fully agree with the celebrated HUFELAND, who lays down the following conditions and limitations

Wool, on account of its rough ſurface, is more calculated to abſorb infectious morbid matter,

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ations in what relates to the uſe of flannel:—"Upon the whole, 'ſays he,' I am of opinion that it would not be adviſable, at leaſt to children and young perſons, *univerſally* to adopt a woollen texture for the covering of the ſkin. It is, however, a *ſalutary* dreſs to thoſe who, in all probability, have commenced the ſecond half of their life; to all cold or phlegmatic temperaments; to all who lead a ſedentary life; to individuals ſubject to catarrhs, or frequent colds, gout, diarrhœa, and partial congeſtions of the blood; to all nervous patients and convaleſcents from ſevere chronic diſorders; to perſons who are too ſuſceptible of the impreſſions of the atmoſphere; and, laſtly, in ſuch climates and purſuits of life as are expoſed to frequent and ſudden changes of air.—It is, on the contrary, *hurtful* to all thoſe, without exception, who are already ſubject to violent perſpiration, or troubled with cutaneous eruptions, and who cannot afford to change their under-dreſs as often as is conſiſtent with cleanlineſs."

Profeſſor Hufeland, doubtleſs, meant to ſay that the wearing of flannel next the ſkin is *then only hurtful*, if none of the conditions before ſpecified reconcile its uſe; for, even in caſes apparently doubtful, the temporary wearing of flannel is not attended with ſuch danger as might perhaps reſult from neglecting its application. But although it be obviouſly conducive to health, the Profeſſor recommends only ſuch a texture of wool, as is ſufficiently porous, and neither too rough nor too thick.—Coarſe woollen ſtockings in winter, and thin ones in ſummer, ought in his opinion to be more generally worn. Thoſe perſons, laſtly, who are in a good ſtate of health, and have no particular reaſon for wearing flannel, or whoſe ſkin is too irritable, may find it, he thinks, beneficial to wear a cloth fabricated of a mixed texture of cotton and linen.

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than

than a more ſmooth ſubſtance; but we have nothing to apprehend from flannel on the ſkin, and under the uſual dreſs. I am rather of opinion, that it is a better preventive againſt contagion than any other; becauſe, while it encourages perſpiration, it at the ſame time removes the inhaled poiſonous particles, particularly if, in caſes of danger, perſpiration be increaſed by other ſuitable means. Hence people wearing flannel on their ſkin, never ſuffer from cold. I have been informed, that the manufacturers in the different founderies of Birmingham, as well as at the iron-works of Colebrook-Dale and Kettley, in the moſt intenſe heat, wear no other but flannel ſhirts; and that without theſe it would be impoſſible to prevent continual colds, and the moſt fatal diſeaſes. With this beneficent intention the Britiſh ſoldiers upon the Continent, ſome years ago, were furniſhed with flannel waiſtcoats, by the liberal ſubſcriptions of individuals, which, I am convinced, ſaved many lives that muſt otherwiſe have fallen victims to the effects of a cold and moiſt climate.

Theſe advantages ſtrongly recommend the uſe of flannel to every one anxious to preſerve his health, but particularly to thoſe who are expoſed to all kinds of weather, as huſbandmen, fiſhermen, mariners, ſoldiers, and travellers. As flannel is ſuitable to all ſeaſons; as it requires no great changes in the under-dreſs; and as it is a tolerable ſubſtitute for a deficiency of upper-dreſs; it deſerves

every attention among thoſe who provide for orphan and poor-houſes, as well as for the indigent of every deſcription. Many deſperate diſeaſes in the legs of the common people, many inflammations of the throat, breaſt, and lungs, might be prevented, and many lives ſaved, both of children and adults, if flannel were more generally worn.

Thoſe who complain of cold legs and feet, are never comfortable nor healthy: if they could be prevailed upon to wear worſted ſtockings and flannel drawers, they would acquire a quicker circulation of the blood in the lower extremities, and prevent many troubles and indiſpoſitions, from which, without this precaution, they cannot eſcape. Moſt valetudinarians and patients ſlight this advice, becauſe they imagine that the wearing of flannel is attended with uneaſy ſenſations. This idea, however, ought not to prevent them from giving it a fair trial; for the uncomfortable feeling continues only for a few days, as I have myſelf experienced; and this trifling facrifice cannot be compared with the ſalutary effects, which flannel next the ſkin almoſt uniformly produces. By continuing it ſufficiently long, and changing it frequently, the moſt obſtinate gouty and rheumatic complaints have often been removed, and many other imminent dangers averted. Children afflicted with rickets, cannot be better relieved than by a proper diet, and flannel ſhirts, which may be daily fumigated with amber, petroleum, or other fragrant ſubſtances; a proceſs,

which

which has been frequently productive of the moſt beneficial effects.

Of Stockings.

Cotton ſtockings, which are ſo generally worn at preſent, are highly objectionable. There is no part of the human frame, which perſpires ſo much as the feet. The diſagreeable ſenſation cold feet produce, is well known; for the connection between the feet and head, the ſtomach, the uterus, and many other important parts of the human ſyſtem, is ſo intimate, that gout, ſuppreſſion of the critical evacuations, pain in the excretory organs, nay cancer, inflammation of the uterus, and abortion, may be the conſequence of cold feet and legs, which are the neceſſary effects of wearing cotton and ſilk ſtockings. Cotton and linen worn next the ſkin, if once filled with perſpirable matter, do not admit any more to paſs through them; a glutinous and cooling moiſture accumulates, and it is not eaſy to keep the feet thoroughly clean in this dreſs. Thoſe who alternately wear cotton and worſted ſtockings, muſt ſoon obſerve the difference in the exhalation and moiſture peculiar to each. Cotton, though ſomewhat better than linen, is ſtill much inferior to wool, which is alone calculated to abſorb and exhale the noxious humours emitted by the pores.

The reciprocal effect of the perſpiration of the feet, and of the leather of the ſhoes, is greater than is commonly believed. Hence thoſe, who wear cotton ſtockings, ought, from reſpect to cleanlineſs, as well as health, to change them according as their exerciſe increaſes perſpiration.

Although the feet are the principal ſources or conductors of exhalation from the body, little attention has been paid to them, with a view of promoting this ſalutary ſecretion. Inſtead of profiting by this hint of nature, mankind have been imprudently and unaccountably ſtudious to ſtop that canal; imagining this to be the ſafeſt way of preſerving the feet dry, and free from all diſagreeable ſmell. Dry feet are certainly preferable to moiſt: but the means of promoting perſpiration, are alſo the only means capable of keeping the feet dry, and free from any unpleaſant fetor.—It is alſo improper and unhealthy to wear any other but woollen gloves, which ought to be worn by all females, who wiſh to improve the ſkin of their hands and arms; no coſmetics or waſhes are ſo certain and ſo powerful in their effects: on the contrary, all external applications, unleſs aſſiſted by internal remedies, are attended with the poſitive ruin of ſkin, bloom, and health.

Perſons who have a great tendency to perſpire in their feet, and who increaſe this exudation by much walking or dancing, will no doubt be

ſenſible, that their cotton, thread, or ſilk ſtockings, inſtead of removing the tranſpired matter, actually abſorb it; bring it in contact with the ſkin; preſerve it in a ſtate of heat favourable to putrefaction; and check all farther perſpiration.

That the feet are more expoſed to the effects of cold, and to ſtagnations of the fluids, than any other part of the body, is unqueſtionable: 1ſt, becauſe they are the moſt remote parts from the heart, and the quickneſs of the circulation of the blood decreaſes in proportion to that diſtance; and 2d, the blood circulating downwards makes its way to the heart ſomewhat ſlower, on account of its own gravity. By this ſlowneſs in the circulation, more watery particles are depoſited by the blood. It is therefore neceſſary to keep the feet ſomewhat warmer than the reſt of the body, in order to encourage the motion of the fluids to the upper parts. Woollen ſtockings are excellently adapted for that purpoſe, and they ought to be choſen rather thicker than thoſe flannels uſed for ſhirts and drawers. For the ſame reaſon, it is proper to prevent all moiſture from without, by means of water-proof ſhoes, provided with thick cork ſoles for the winter, or with elaſtic ſocks of horſe-hair.

The moſt diſagreeable ſenſation produced by the feet in perſpiring, is between the toes: this can only be prevented by wearing ſtockings made with toes, like the fingers of gloves; becauſe theſe

alone can abſorb and prevent the viſcid and fetid particles from ſettling there. But as this propoſal is not likely to meet with the approbation of the votaries of faſhion, I ſhall ſubſtitute an eaſier method of remedying the unpleaſant effects of violent perſpiration in the feet. A powder of burnt alum will overcome this fetor, by neutraliſing the acrid particles; and, at the ſame time, will not obſtruct the neceſſary perſpiration.

Of Dreſs, as to its Form.

All coverings of the head, of whatever kind, produce more miſchief than benefit. The well-known and excellent rule, of keeping the head cool, and the feet warm, is too much neglected, eſpecially by the lower claſſes of the people in many countries, as in Scotland, Holland, and Germany, and likewiſe among people of a certain age and deſcription in this country. The Scotch peaſant wears his heavy bonnet, the Dutchman his cap, and the Turk his turban, without conſidering that ſuch heavy loads are ſtupifying, and that, while no attention is paid to keep their feet warm and dry, their heads are virtually converted into vapor-baths. In all countries, the man who lives at his eaſe, carefully covers his head with a warm night-cap; he ſpends perhaps one half of the day in this unnatural dreſs, and prepares his head for frequent

colds,

colds, at every ſudden change in the atmoſphere. Beſides, weakneſs of the head, pains, eruptions, local plethora or fullneſs of blood, loſs of the hair, lethargy, and at length ſtupor or inſanity are often the effects of this imprudence *.

In our moderate climate, we might ſafely accuſtom our youth to go with the head uncovered; as Nature has already provided it with hair for that purpoſe. In very cold and hot countries, however, the head muſt be ſlightly covered, to ſhelter it from cold, or from the ſtill more dangerous vertical rays of the ſun.

It is an inſtance of improvement in the education of children in England, that their tender heads are not ſo much ſhut up in cloſe caps, and furbonnets, as thoſe upon the Continent. A practice ſo injudicious and hurtful deſerves no imitation; and yet there are advocates for *warm* night-caps and wigs; they would ſtarve their feet, while the head is encloſed in an artificial ſtove, which

* For ſome years the ladies, inſtead of thoſe horrid maſſes of frizzled hair, which uſed at once to injure their health, and diſfigure their faces, happily returned to beautiful and elegant nature; having their hair hanging down in graceful ringlets, while the only artificial covering was a ſimple turban, or an ornamental bandeau. Of late, however, this taſteful ſtyle of decoration has been ſucceeded by unnatural, diſguſting, and unhealthful *wigs*; a faſhion probably introduced by ſome ugly and bald woman, to reduce her gay and beautiful imitators to her own ſtandard of deformity.

enfeebles their mental faculties, and diminiſhes their bodily vigour.

New-born children, and thoſe who are moſt tender, require only an eaſy and moderately warm covering for the head, and this chiefly during the firſt weeks, on account of the ſoftneſs of their cranium, then but imperfectly offified. Yet ſuch a cap ſhould be looſely tied, that it may not preſs the head, nor cripple the muſcles of the ears.

That the ear is naturally capable of ſome motion, is proved by the muſcles with which it is provided. Its form, reſembling a ſhell, is admirably adapted to receive and convey ſound. In the vain conceit, that a projecting ear, ſo as the author of nature has created it, is a deformity, nurſes and over-wiſe matrons endeavour to preſs the child's ear, from its firſt appearance, cloſe to the head. Thus they render the ſhell of the ear immoveable, and diminiſh the capacity of hearing. A properly-expanded ear not only ſtrengthens the acuteneſs of hearing, but likewiſe preſerves this uſeful ſenſe to a great age, when the muſcles of the internal organs of hearing become relaxed.

To go with the head uncovered, in ſunſhine, is certainly improper, both for children and adults; but our common black hats are ill calculated to avert the miſchief, as they do not reflect the heat, but rather concentrate it in the moſt ſenſible manner

ner upon the head. Hats of a white, or any other light colour, made of ſtraw or ſimilar light materials, would be far preferable, particularly for people labouring in the fields, ſoldiers, and travellers. In very hot weather, a piece of white paper may be faſtened with advantage on the crown of the hat.

As the hat ought likewiſe to ſhelter the eyes from too vivid a light, the brim ſhould be broad enough to protect them, and the inner ſide of a green or blue, but not of a black, nor a dazzling colour. From the preſent mode, however, it appears that both ladies and gentlemen think a brim almoſt, if not altogether unneceſſary, even when the power of the ſun is moſt oppreſſive.

Perſons ſuffering from periodical head-achs, or whoſe heads are otherwiſe unhealthy, ſhould have their hair cut ſhort. By this petty ſacrifice, they will promote the neceſſary perſpiration, the head will remain cool, and the cold bathing of it can be practiſed with more advantage. In this point of view, wigs cannot be *altogether* condemned, as long as hair-dreſſing, artificial braids, and other ornaments, form an eſſential part of faſhionable dreſs. Beſides, the wearers of wigs are, in a great meaſure, exempt from many inconveniences and evils attending the uſe of powder and pomatum. Laſtly, if we muſt chooſe one of the two maladies of the times, it is moſt rational to adopt the leaſt noxious to health: and ſo far I think a *light wig* is juſtly preferable to a head enveloped

in

in an artificial paſte of powder and pomatum. Thoſe, however, who are once accuſtomed to wear a wig, ſhould not upon any account again let their hair grow, in order to have it dreſſed, paſted, and powdered anew.

With reſpect to *Shirts*, the moſt proper ſubſtance having been before inveſtigated, I ſhall only add, as to their form—that they may be ſeriouſly prejudicial to health, if too narrow in the collar, and in the wriſtbands. I have ſeen ſeveral inſtances of people attacked with ſhortneſs of breath and difficulty of ſpeech, from this reaſon only, becauſe the blood cannot circulate freely, if the neck and wriſts be tied or buttoned up too cloſely. I was once preſent where a young man, playing at rackets, was ſuddenly ſeized with an apoplectic fit, the cauſe of which ſeemed at firſt inexplicable. As ſoon, however, as his ſhirt-collar, wriſtbands, and garters were looſened, he recovered.

Neck-cloths, cravats, ribands, and necklaces of all ſorts, *when they are too tight*, ſtop the acceſs and retreat of the blood to and from the head, occaſion accumulations of the blood and other fluids, head-achs, faintings, ſtupor, apoplexy, corroſive ulcers of the ſkin, and innumerable other maladies. All coverings of the neck ought therefore to be conſtantly worn looſe. People who are liable to ſore throats, and diſeaſes of the breaſt, might gradually accuſtom themſelves, in mild and dry

dry weather, to go with their necks as ſlightly covered as poſſible, and if faſhion would permit it, to have no other covering but the collar of the ſhirt. In cold and moiſt weather, a thin handkerchief might be added. But the modern cravats, filled with a ſtiffening of cotton or wool, are extremely injurious to the part which they are intended to protect. For, by occaſioning too great heat, they render the neck unnaturally ſenſible to every change of the atmoſphere. It is rather ſurpriſing, that from a due ſenſe of their perniciouſneſs, we have rejected all coverings of the neck in children, as being troubleſome and uſeleſs; and yet, in defiance of reaſon and experience, we continue to incumber our own necks with ſuch bandages.

Neck-laces and ribands, likewiſe, are generally tied ſo cloſe, as to preſs with violence on that ſuppoſed deformity of the throat, vulgarly called the *Adam's apple*, which projects leſs in the female than in the male ſex. Theſe ribands and neck-laces, when worn tight, are the more inconvenient and dangerous, if they be narrow and edged. Upon taking them off, which is too frequently neglected at night, they leave an impreſſion on the neck, clearly proving the impediment they are to free muſcular action, and what ſtagnations, pain, and dangerous conſequences they may occaſion. The neck and throat, being alternately expanded and contracted, in ſpeaking, chewing, and ſwallowing, it is the higheſt degree of imprudence

to obſtruct its motion, for the ſake of appearance, vanity, or faſhion.

Equally objectionable are thoſe black ſtocks, that were formerly much in faſhion, and are ſtill worn by ſome old beaux and military men. The latter indeed deſerve our compaſſion, from being obliged to wear theſe uncomfortable collars; but the former ought to conſider, that they expoſe themſelves to dangers, increaſing as they advance in age, and rendering them every day more liable to apoplexy. I knew a regiment of ſoldiers on the Continent, whoſe Colonel was ſo exceſſively fond of what he conſidered a martial appearance, that he cauſed his officers and men to have every article of their uniform remarkably tight, particularly the ſtocks, waiſtbands, and knee-garters. The conſequence was, that in the courſe of a few months above the half of his regiment became ſubject to very obſtinate cutaneous diſeaſes, and other obſtructions, ſo that they were unable to perform duty. Other regiments in the vicinity alſo ſuffered from this deſtructive cuſtom; but the proportion of their diſabled ſoldiers was like one to ten in the former. — The late Dr. FOTHERGIL, aſſerts, that theſe tight ſtocks are productive of apoplexy, if a perſon look for ſome time, with his head turned, without moving his body. By this alone, he believes, people have brought on apoplectic ſymptoms. For ſuch a turn of the neck, when the body ſtands fixed, diminiſhes the diameter

diameter of the jugular veins ſo much, that a proportionate quantity of blood cannot return to them, from the veſſels of the head and the brain.

Neck-cloths or cravats, looſely tied, and not too thick, are therefore the only proper ones for *Men*; but as to *Women* and *Children*, it cannot be diſputed, that they would be better without any.

Laced Stays are, among the better ranks of ſociety, at preſent out of faſhion; ſince the Grecian form is juſtly preferred to all artificial ſhapes. Yet, when we have adopted an uſeful habit ourſelves, it is our duty to recommend it to thoſe alſo, who are ſtill following a deſtructive practice. And with this intention I cannot but reluctantly obſerve, that nine-tenths of the community ſtill wear theſe oppreſſive *ſtrait jackets*, merely becauſe their mothers and grandmothers have done the ſame. I ſhall therefore briefly ſtate a few of the conſequences, ariſing from this unnatural part of female dreſs, namely, diſeaſes of the breaſt, external calloſities, and cancer itſelf; the ribs are compreſſed; the ſpine is bent out of its place; the free expanſion of the lungs is prevented: hence ſhortneſs of breath, indurations and tubercles of the lungs, cramp of the ſtomach, defective digeſtion, naufea, irregularities in the ſecretory and other organs, and the like: in ſhort, the liſt of the maladies thus produced is too long to be here detailed; and both married and unmarried ladies, for the ſake of compaſſion, ſhould exert all their influence,

influence, to convince the common people of the injuries occaſioned by ſtiff laced ſtays. If any ſuch part of dreſs be at all admiſſible, it ought to conſiſt of ſoft and pliable materials, ſuch as fine chamois leather, hatter's felt, or, what is ſtill better, the knitted and more elaſtic texture uſed for gloves and ſtockings.

All that has been ſaid, with regard to laced ſtays, is alſo applicable to ſmall waiſts, and tight coverings of the breaſt and the abdomen *.

Narrow ſleeves in gowns and coats, tight wriſt-bands in ſhirts, and bracelets, occaſion a ſwelling of the veins on the back of the hand, rigidity, weakneſs of nerves, and incapacity of bending the arm. If the arms be in this manner twiſted from infancy, their growth and formation are impeded; and it is probably owing to this cauſe, that we ſee ſo many perſons with ſhort, thin, and ill-formed arms.

Women ſuffer much more by this bandage than men, whoſe arms poſſeſs more muſcular ſtrength, and have not the interſtices of the muſcles filled with fat, like the former. In this reſpect, the modern faſhion of tying the ſleeves of ladies

* Faſhion delights in extremes. No ſooner had the fair ſex abandoned the unnatural and unhealthful cuſtom of long taper waiſts, than they in a manner concealed the waiſt altogether. Inſtead of the cincture round the middle of the body, as nature and taſte directed, they bound themſelves over the breaſts, — a cuſtom not leſs prepoſterous than injurious to health.

gowns

gowns close to the elbow, deserves particular censure; as the circulation of the blood, together with the motion of the arms, is thus obstructed, and many disagreeable consequences wantonly induced. Farther, the female arm is naturally somewhat fuller from the shoulder downwards, and again becomes smaller towards the joints of the hand: but in man, it is always more muscular a little below the elbow. From this difference in the structure, it is obvious, that the sleeves in a female dress lie close to the whole arm, while those of a man's coat but partially attach to it.

Many of the remarks already suggested, respecting the form and substance of other parts of dress, are likewise applicable to the article of *breeches*. If these be made of improper materials, or too tight in the waistband, they must occasion both uneasiness and injury to the body. Yet the ingenious observations, lately published on this subject by Dr. FAUST, an eminent physician in Germany, are by no means so conclusive, as to induce us to abandon an article of dress, not only rendered necessary by the laws of decorum, but which, when properly constructed, is even of considerable service; inasmuch as breeches, by their moderate pressure, tend to strengthen the relaxed parts of the body, particularly at a tender age.

The most proper form of this vestment is, upon the whole, that of *pantaloons*; but they ought to be sufficiently wide, of a thin cooling substance in-

ſummer, and of a warm elaſtic woollen cloth in winter. Tight and contracting leather breeches, purpoſely contrived to diſplay an elegant ſhape of the limbs, are extremely inconvenient, occaſion numbneſs and chillineſs all over the hip and thigh, and a painful preſſure of the *pudenda*. Leather is alſo an improper ſubſtance for this part of dreſs; as, on account of its cloſe texture, it is apt to check inſenſible perſpiration. If the waiſtband be too ſtrait, the free motion of the internal parts of the abdomen will be obſtructed, the abſorbent veſſels of the inteſtines prevented from performing their offices, and hypochondriacal complaints be eaſily induced. This inconvenience may be entirely avoided, by the uſe of *braces*, now almoſt generally adopted, and which, as they render a tight cincture altogether unneceſſary, cannot be too much recommended both to men and women, for the ſake of health as well as comfort.

There are many reaſons, which delicacy forbids me to mention, why it would be highly beneficial to the phyſical and moral condition of females, to wear ſome kind of drawers, at leaſt after a certain age. This additional piece of dreſs would effectually prevent ſeveral inconveniences to which women are ſubject. There are other circumſtances attending their uſual dreſs, which contribute to bring on a premature ſexual impulſe, and are apt to induce them to habits equally irregular

gular and injurious to health. This hint cannot be misunderstood by judicious mothers, and, it is humbly presumed, will not be totally disregarded; especially as young females but too readily accustom themselves to sit in an improper posture.

Concerning the clothing of the legs, I must in the first place censure the use of tight *garters*, particularly in men, to whom they are altogether unnecessary. Whether females can do without them, is scarcely fair to question: but if any substitute or contrivance can be adopted in their place, it will amply compensate any little trouble or inconvenience:—the stockings can easily be tied to some tape fastened to the waistband. This apparently trifling improvement is of greater moment, than many are inclined to imagine; for garters are undoubtedly the cause of much mischief, whether tied below or above the knee. The part to which they are applied, acquires an unnatural hardness; they dispose the thighs and legs to dropsy, induce great fatigue in walking, and are very probably the cause, that certain persons so frequently stumble, fall, and dislocate or break the knee-pan. The great difference in walking, with and without garters, I have myself sufficiently experienced. Many years ago, when in compliance with early habits and prejudices, I was accustomed to the use of garters, I could not walk or ride half a dozen miles without fatigue; which

inconvenience I found immediately remedied, on abandoning thoſe improper ligaments.

The advantages of woollen *ſtockings* have been already pointed out. Upper ſtockings of ſilk, cotton, or linen, will be no impediment; and they may be choſen of thicker or thinner quality, according to the weather and ſeaſon. But the beſt ſtockings may become hurtful, if too ſhort in the feet, and may bring on a ſpaſmodic rigidity, and diſtortion of the toes. If, on the other hand, the feet of the ſtockings are too wide, ſo that they make folds in the ſhoes, they will injure the ſkin by their friction, and be attended with painful conſequences. The ſtockings of children ought neither to cover the knees, nor be tied in any other manner, than by faſtening them with ſtrings to the waiſtband; otherwiſe they will increaſe the ſize of the knees, render them preternaturally thick, and may produce white ſwellings, and other dangerous maladies.

Boots, if too tight, and made of thick leather, are ſo injurious to health, and ſo troubleſome in walking, that no reaſonable being will be inclined to force his feet and legs into them. The conſequences of a practice, as hurtful as it is injudicious, are obvious from the preceding obſervations.

The conſtant uſe of boots contracts the ſize of the legs, particularly the calves, as may be daily obſerved

obſerved in military men, and the faſhionable loungers of Bond-ſtreet and Pall-Mall.

I now proceed to the laſt, but not the leaſt important part of our dreſs, namely, *Shoes*. The celebrated Dutch anatomiſt, CAMPER, did not conſider this ſubject unworthy of his attention, as he publiſhed a particular work, "*On the proper Form and Size of Shoes*," as late as the year 1781. The ſhoes ought to be of the ſize of the foot; they ſhould be alſo accommodated to the degree of motion or exerciſe, and to the nature of the ſoil and place, in which we wear them; circumſtances that are at preſent too little attended to. A ſhoe that is bigger than the foot, prevents a firm ſtep; while one which is too narrow occaſions pain and troubleſome corns. Many volumes have been written on the Art of Shoeing that noble and uſeful animal, the Horſe;—it is conſidered as a fundamental rule in Farriery, that the ſhoe muſt be neither ſmaller nor larger than the hoof; and yet mankind can ſubmit to ſcrew their feet into a narrower compaſs than is intended by Nature. How frequently do we ſmile at the Chineſe who, from a tyrannical cuſtom, ſqueeze and compreſs their feet, that they may remain ſmall and crippled. Yet theſe feeble Orientals proceed more rationally in this practice, than their European rivals. *They* begin with it gradually, and from the earlieſt infancy. *We* do not think of contracting the feet of our children, till they have almoſt at-

tained the natural ſize, and thus endeavour to counteract the progreſs of Nature, when it is too late to do it with impunity. Who then are the greater ſlaves of faſhion, the Chineſe, or their enlightened antipodes?—It is pitiable to ſee the young and old, of both ſexes, advancing into an aſſembly or ball-room, with the moſt painful ſenſations. Without conſulting Lavater's Phyſiognomy, it is eaſy to diſcover, by their diſtorted features and compreſſed lips, what many whimſical perſons ſuffer from too tight, or, what is ſtill worſe, from ſhort ſhoes.—Our knees would be more flexible, and our toes more pliable, more uſeful, and better adapted to perform the various motions of the feet, if they were not continually preſſed and palſied by this improper *caſe-work*. Nature has deſigned the toes to be as moveable as the fingers. Thoſe unfortunate beings, who are born without hands, learn to perform with the toes the moſt aſtoniſhing taſks, to write and cut pens, to ſew, to draw; in ſhort, to ſupply almoſt completely the want of their hands.

Our feet, no doubt, would be more comfortable, eaſy, and uſeful, if we were not at the greateſt pains to deprive them of their elaſticity and vigour. The numerous nerves, croſſing the feet in every direction, plainly evince that Nature has endowed them with peculiar powers, of which we can ſcarcely form an adequate conception. The untutored Indian, or the wild African, excels not only the enlightened European, but likewiſe the

lower animals, in running, leaping, and, in ſhort, in ſwiftneſs and agility of every kind, where muſcular motion is required. Either of them would heartily laugh at us, when we are obliged to employ profeſſional operators for extracting corns, and to contrive ointments and plaſters for the cure of thoſe evils, which we have wantonly brought on ourſelves.

The judicious BUCHAN ſays: "Almoſt nine-tenths of mankind are troubled with corns; a diſeaſe that is ſeldom or never occaſioned but by ſtrait ſhoes;" and I preſume to add, that the remaining tenth part do not envy their fellow-creatures for this modern improvement. Our anceſtors, even within my memory, wore their ſhoes with broad toes, which ſhowed at once their good ſenſe, and due attention to health and comfort. He who is regardleſs of the pain and trouble occaſioned by warts, excreſcences, and calloſities of various forms; he who wiſhes to convert his feet and toes into ſo many barometers, to indicate the preſent ſtate, and to foretel the future changes of the weather, will ever agree with his ſhoemaker, to ſave as much leather as poſſible; and he is ſcarcely to be pitied for his imprudence. Such a perſon will not unfrequently be diſappointed in his excurſions, when his crippled feet require temporary reſt. I am further perſuaded, that ſuch ceſſations of exerciſe are extremely detrimental to health in general, and that they may be regiſtered among the prediſ-

poſing cauſes of the gout, rheumatiſm, and dropſy. Many people are thus almoſt deprived of the uſe of their legs; and the pain of the more virulent ſpecies of corns, as well as of the nails, when grown into the fleſh, is excruciating.

For theſe obvious reaſons, the ſoles of the ſhoes ought to be ſufficiently broad, eſpecially under the toes, where we are accuſtomed to ſee them ſo pointed, that they appear to be intended for weapons of attack or defence. If, for inſtance, the greateſt breadth of the foot be four inches, the ſhoe ſhould not be three and a half, but rather four and a half inches broad, ſince the bulk of the foot, and the ſeam of the leather, require an allowance of half an inch. The ſoles alſo ought not to be bent hollow, as is frequently done in women's ſhoes; for, ſince the foot is not ſo conſtructed as to preſent a ſpherical ſurface, it is improper to deprive it of that firm hold, which Nature has given it by a nearly flat form. The foot muſt neceſſarily ſuffer from this ill-contrived ſhape, which deprives it of its flexion, occaſions difficulty in walking, and renders every ſtep unpleaſant and unſafe.

In the ſame manner as ſome perſons ſtrangely endeavour to diminiſh the breadth of the foot, others are equally diſſatisfied with its length. Hence we ſee them make uſe of an inſtrument, to force their feet into ſhoes perhaps an inch ſhorter than is requiſite for an eaſy motion. This

cuſtom

cuſtom is the moſt deſtructive of any, and, though not much practiſed at preſent, ſince a long and narrow pointed ſhoe is the moſt faſhionable, yet the inconvenience and danger is not thereby removed. Inſtead of bending the toes with their nails inwards, as was formerly the caſe with ſhort ſhoes, we now ſqueeze them together, and often lay them croſs-ways over one another, ſo as to carry them about without motion, like a mere inſenſible maſs of matter. Upon ſtriking the foot againſt a ſtone, we feel the puniſhment due to ſuch outrage. Shoes of this kind may be aptly compared to the wooden boxes worn by the Dutch and French peaſants, from neceſſity, in wet ſeaſons, and which admit of quite as much motion as the long and ſharp-pointed machines, in which our beaux and belles cramp their feet from choice.

A convenient ſhoe, therefore, ought to be ſomewhat round at the toes, ſufficiently long, with thick ſoles, and the upper leather ſoft and pliable. If it be deficient in any of theſe requiſites, the ſkin will be rendered callous; the perſpiration indiſpenſable to theſe parts will be ſtopped; warts and corns will appear in numbers; the nails will grow into the fleſh, and various complicated maladies be produced, which not only affect the feet, but the whole body. Beſide theſe more ſerious conſequences, a perſon walking with narrow ſhoes will

be much ſooner, and more ſenſibly fatigued, than he whoſe ſhoes are ſufficiently wide and eaſy.

The poor, as well as country-people, who wear ſhoes ſufficiently large, have not only a much ſafer ſtep, but their feet are leſs ſubject to the multiplicity of complaints, with which ours are annoyed. Thoſe who, either from inclination or frugality, go barefooted in ſummer, have not even to plead the reaſon of the Ancients, who conſidered it as a mark of chaſtity; and I cannot help remarking, that it is both indecorous and unwholeſome, as well as an injudicious ſpecies of œconomy. The ſhoe, in our climate and mode of life, is a neceſſary defence againſt many accidental injuries, to which the foot is liable; and it is likewiſe a crime againſt decency, to expoſe any part of the human body to duſt and mire.

With reſpect to the *ſubſtance* of which ſhoes ſhould be made, no other general rule can be given, than that it ought to be ſufficiently compact, to prevent the water from penetrating it; ſo elaſtic and ſoft, as to admit an eaſy motion of the whole foot; and accommodated to the weather, exerciſe, and ſoil in which it is uſed. To thoſe who have not the means or opportunity of procuring the patent water-proof leather, I ſhall ſuggeſt a method of preparing this ſpecies of leather, at a very ſmall expence. One pint of *drying oil*, two ounces of *yellow wax*, two ounces of *ſpirit of turpentine*, and

one

one ounce of *Burgundy-pitch*, are to be carefully melted together, over a ſlow fire. Thoſe to whom the ſmell of pitch and turpentine is unpleaſant, may add a few drachms of ſome cheap eſſential oil, as of *lavender*, *thyme*, and the like. With this compoſition new ſhoes or boots are rubbed, either in the ſun, or at ſome diſtance from a fire, with a ſponge or ſoft bruſh: this operation is to be repeated as often as they become dry again, until they be fully ſaturated. In this manner, the leather at length becomes impervious to wet; the ſhoes or boots made of it laſt much longer than thoſe made of common leather, acquire ſuch ſoftneſs and pliability, that they never ſhrivel nor grow hard and inflexible, and, thus prepared, are the moſt effectual preſervatives againſt cold and chilblains.

To conclude, I ſhall only remark, that it is not adviſable to change the ſhoes from one foot to the other. Let us rather tread one of the ſhoes ſomewhat crooked, than injure our feet and health, by an adherence to a cuſtom, which has nothing but cuſtom to recommend it. If it be our ſerious wiſh to avoid corns and other painful accidents, to which the rage of faſhion ſubjects the feet of its votaries, we ſhould perſuade the ſhoe-makers to provide us with a particular ſhoe for each foot; and this can be done only by keeping *ſeparate double laſts*, for every wearer.—Is it not injudicious and abſurd, to have both ſhoes made of the ſame ſize and form, when Nature has not formed

formed both feet alike, or at leaſt not in the ſame direction?

It gives me great ſatisfaction to add that, ſince the firſt edition of theſe Lectures was publiſhed, the rational practice of having ſeparate ſhoes purpoſely made for each foot, has already been adopted among the more enlightened claſſes of ſociety. From a full conviction of its great utility, I ſincerely wiſh that it may ſoon become univerſal!

CHAP. V.

Of FOOD *and* DRINK;—*their Quantity, Quality, Proportion to each other, Time of taking them, &c.* —*Of* SPICES.—*A Claſſification of the moſt uſual alimentary Subſtances, according to their individual Effect on Health.*

ALTHOUGH it be certain, that animal life could not be ſupported without food and drink, few individuals give themſelves the trouble of reflecting, how the very important function of aſſimilating our aliment is accompliſhed. That office of the ſtomach, by which all living creatures are ſupported, deſerves the attention of every inquiſitive mind. Were I not confined in my plan to the relative ſalubrity of Food and Drink, without entering into phyſiological diſquiſitions, how the digeſtive organs prepare and conduct the food from one ſtage to another, till it is converted into chyle, and from that into blood, I might amuſe my readers with a variety of ſpeculations and theories, none of which are fully eſtabliſhed; but ſuch digreſſions, however entertaining or gratifying to curioſity, would be of little ſervice, either in making the proper choice of aliment, or in aſcertaining its wholeſome or pernicious qualities.

If,

If, in the early periods of ſociety, when men ſubſiſted upon roots, plants, and animal food, as they were promiſcuouſly found, people did not reflect upon the relative ſalubrity of things, we have no right to cenſure them; as they often might have been ſtarved, before they could have diſcovered their qualities. But if we, in our preſent ſtate of knowledge, neglect ſuch inquiries; if we indiſcriminately feed on whatever is preſented to our palate; ſuch conduct deſerves ſevere animadverſion. For, if man aſſume the right of calling himſelf Lord of the Creation, it is a duty incumbent on him, to make himſelf acquainted with the nature and properties of thoſe ſubſtances, which ſo eſſentially contribute to animal exiſtence.

Hence it may be juſtly aſked, what are the conſtituent parts of aliment—how are they to be diſtinguiſhed—are they of different kinds, or do they, with all the difference of form and taſte, ſtill manifeſt the ſame properties, powers, and effects—do they promiſcuouſly ſupply all the parts of the human body, or are particular kinds of food more or leſs adapted to ſupply the wants of different parts of the body—and laſtly, have all ſubſtances, we make uſe of as food, an equal ſhare in this *nutritive principle?* Such are the queſtions, which muſt ariſe in every reflecting mind; and as the preſervation of the body depends ſo much on the manner, in which the continual waſte is ſupplied, it is a matter of the firſt conſequence, to

chooſe

chooſe the ſubſtances which are moſt congenial to the different ſtates and conditions of the body.

An eaſtern Derviſe was once aſked by a wealthy Mahometan, "Of what ſervice to ſociety is an "order of men, who employ themſelves in ſpecu-"lative notions of divinity and medicine?"—"If "you were more cautious and temperate in your "meals," anſwered the Derviſe; "if you would "learn to govern your paſſions and deſires, by a "due attention to abſtinence, you all might be "ſages, and have no occaſion for Derviſes among "you. But your appetite and aliment impair "your underſtandings!"

In the conſumption of food and drink we are liable to commit errors, both as to their quantity and quality. The error in the quantity, however, is generally the moſt detrimental. A ſmall portion of food can be better digeſted and more eaſily prepared into chyle, or that alimentary fluid, from which the blood derives its origin, than a large portion of food, which injures the coats of the ſtomach, and prevents them from exerting their force. Hence every ſatiety, or ſuperfluity, is noxious.

It is in infancy, and early age, that the foundation is laid for the many diſeaſes ariſing from indigeſtion, which are now found in almoſt every family. If children are fed immoderately, and beyond the real wants of nature, the firſt paſſages become

become too much diſtended, and their ſtomach by degrees acquires an unnatural craving for food, which muſt be ſatisfied, whatever be the conſequence. Theſe exceſſive ſupplies not only are unneceſſary, but produce the moſt ſerious and fatal diſorders. There is a certain relation ſubſiſting between what is taken in, and what is loſt by the body: if we eat and drink much, we likewiſe loſe much, without gaining any more by it, than we might do by moderate meals. For that which affords the alimentary particles, is as it were drowned by the current; and muſcular energy is not only decreaſed, but in a great meaſure deſtroyed. Yet eating too little would be going to the oppoſite extreme, weaken the growth to bodily perfection, and eventually diminiſh the digeſtive power of the ſtomach, by depriving it of its due ſhare of exerciſe and ſupport.

Nature is eaſily ſatisfied, and is always beſt provided, if we do not intrude upon her more than ſhe is accuſtomed to. If we have, for ſome time, taken little nouriſhment, nature becomes ſo habituated to it, that we feel indiſpoſed, as ſoon as the uſual meaſure is tranſgreſſed; and both the ſtomach and its digeſtive powers are thereby impaired.

The hardy countryman digeſts the crude and ſolid food, at which the ſtomach of the luxurious citizen recoils. In order to ſtrengthen the ſtomach, we ought not to withhold from it what keeps

keeps it in proper exercise. But, for this purpose, we should rather improve the quality, than increase the quantity of alimentary substances. It is with this organ as with all other parts of the body: the more exercise we give it, the more strength and vigour it acquires. Hence, it is highly improper to leave off eating food of difficult digestion, as some people are apt to do; for this is not the way of improving the energy of the body.

It would be a fruitless and impracticable attempt, to lay down fixed rules, by which the respective salubrity or perniciousness of every species of aliment might be determined, in its application to the individual. It has been before observed, that such rules do not exist in nature; and that the particular state and condition of the person, time, and circumstances, must serve as our guide. Hence it may be considered as a general rule, that all incongruous mixtures and compositions, for instance milk and vinegar or other acids, or milk and spirits, are hurtful, by generating an acid and acrid whey in the stomach, and at the same time producing an indigestible coagulated mass.

Having premised these introductory remarks, I proceed to treat

Of Food in particular.

1. *As to its quantity.* A much greater number of diseases originate, upon the whole, from irre-

gularities in eating, than in drinking; and, in the latter reſpect, we commit more frequent errors with regard to quantity, than quality: otherwiſe the heterogeneous mixture of proviſions, with which we load our ſtomachs, would diſagree with all. This indeed but too often happens. One who eats ſlowly, and a little only of a variety of diſhes, will leſs injure his ſtomach than another, who eats immoderately of one or two favourite articles, and partakes of the others only for the ſake of cuſtom, or as a compliment paid perhaps to a fair hoſteſs.—The gaſtric juice, which is generated in the ſtomach, is capable of diſſolving and digeſting the moſt diverſified materials, provided they be not unſuitably mixed; and a perfectly healthy ſtomach can prepare a chyle, or a milky fluid, of the ſame nouriſhing principle, from all eatable ſubſtances whatever.

The general rule then is, *to eat as much as is neceſſary to ſupply the waſte ſuffered by the body*: if we tranſgreſs this meaſure, we produce too much *blood*; a circumſtance as detrimental, though not ſo dangerous to life, as that of having too little. If we were never to treſpaſs the due limits of temperance, our natural appetite would be able accurately to determine, how much food we might conſume, without diminiſhing our vivacity. But, from the uſual phyſical education of children, this can ſcarcely be expected in adults. We ought therefore to pay ſtrict attention to the ſtate of

thoſe inteſtines, which ſerve to prepare the alimentary fluid; and when theſe are in a relaxed or diſeaſed ſtate, we ſhould inſtantly begin to be more moderate in eating.

There are three kinds of *appetite*: 1ſt, The *natural* appetite, which is equally ſtimulated and ſatisfied with the moſt ſimple diſh, as with the moſt palatable; 2d, The *artificial* appetite, or that excited by ſtomachic elixirs, liqueurs, pickles, digeſtive ſalts, &c.; and which remains only as long as the operation of theſe ſtimulants continues; 3d, The *habitual* appetite, or that by which we accuſtom ourſelves to take victuals at certain hours, and frequently without a deſire of eating.—Longing for a particular food is likewiſe a kind of falſe appetite.—The *true* and *healthy* appetite alone can aſcertain the quantity of food proper for the individual: if in that ſtate we no longer reliſh a common diſh, it is a certain criterion of its not agreeing with our digeſtive organs. If after dinner we feel ourſelves as cheerful as before it, we may be aſſured, that we have taken a *dietetical* meal. For, if the proper meaſure be exceeded, torpor and relaxation will be the neceſſary conſequence; our faculty of digeſtion will be impaired, and a variety of complaints gradually induced.

The ſtomach being diſtended by frequent and violent exertions, will not reſt ſatisfied with the former quantity of food;—its avidity will increaſe with indulgence in exceſs; and tem-

perance alone can reduce it to its natural ſtate, and reſtore its elaſticity. Fulneſs of blood, and corpulency, are the diſagreeable effects of too much eating; which progreſſively relaxes the ſtomach, and puniſhes the offender with headach, fever, pain in the bowels, diarrhœa, and other diſorders.

The more ſuddenly this expanſion takes place, the more forcibly and dangerouſly it affects the ſtomach; and its fibres, being too much extended, are the more ſenſible of the ſubſequent relaxation. Slow eating, therefore, preſerves the fibres in a due ſtate of elaſticity. Hence, *to eat ſlowly*, is the firſt maxim in Dietetics: the ſtomach ſuffering in this caſe but a very gradual diſtenſion, as the food has ſufficient time to be duly prepared by maſtication. He who obſerves this ſimple rule, will feel himſelf ſatisfied, only when he has received a due proportion of aliment. But he who ſwallows his food too quickly, and before it is perfectly chewed, will imagine he has eaten enough, when the unmaſticated proviſions occaſion a ſenſe of preſſure on the ſides of the ſtomach.—The teeth are deſigned by nature to grind our food, and to mix it with the ſaliva, produced by innumerable glands, and deſtined to promote its ſolution.

A healthy appetite is alſo determined by the ſeaſon, to the influence of which the ſtomach is expoſed, in common with the other viſcera. Hence heat, in general, relaxes and exhauſts the

body, from its tendency to diſſipate the fluids, or to diminiſh their quantity; and conſequently the ſtomach cannot digeſt the ſame portion of food in ſummer, which it does in winter. There are however perſons, who have the ſtrongeſt appetite, and poſſeſs the moſt vigorous digeſtive powers, in the extreme heat of ſummer. The bile of ſuch individuals is of a watery conſiſtence, and too ſparingly ſecreted; a defect, which is beſt remedied by heat. Thoſe who take more exerciſe in winter than in ſummer, can alſo digeſt more food. But as individuals leading a ſedentary life uſually ſuffer in winter from a bad ſtate of digeſtion, owing to a want of exerciſe, they ought to take leſs food in that ſeaſon.

We call thoſe ſubſtances *nutritive*, which reſtore and ſupply what has been waſted. They conduct to the body homogeneous or aſſimilated parts, by means of the inteſtinal canal, and by changing theſe parts into muſcular ſubſtance or fleſh, or into the fluid form of blood. Since ſome alimentary articles communicate their nutritive element ſooner than others, as they contain coarſer or more delicate particles, which according to their nature are more or leſs apt to be aſſimilated with the body, it follows, that all of them cannot be equally nouriſhing.

Too little aliment debilitates the body, which thereby acquires leſs than it loſes by reſpiration; it haſtens the conſumption of life; the blood

becomes inert and rarefied; or is rendered acrid and liable to putrefaction. After long faſting the breath is fetid, and the animal body becomes diſpoſed to putrid fevers.—We can more eaſily digeſt a heavy meal, in four hours of accelerated reſpiration and muſcular action during the day, than in eight hours of ſleep. This circumſtance has led mankind to make their principal meal about the middle of the day. A perſon who ſits up five or ſix hours after ſupper, will feel himſelf much more inclined to take a ſecond ſupper, than to go to bed.

Abſtinence readily induces putrid diſeaſes: a faſting of twenty-four hours is followed with a diſguſt and averſion to food, which of itſelf is a ſymptom of putreſcency, and is at length ſucceeded by delirium.—After taking for ſome time too little food, the body is enfeebled; the veſſels are not ſufficiently ſupplied; their action on the whole maſs of the blood, and of the blood on the ſeveral veſſels, is interrupted; its free circulation is checked; and the ſmaller veſſels corrugate, ſo that the thinneſt blood is no longer capable of pervading them, as is the caſe in old age. When a perſon has ſuffered ſo much from extreme hunger, that his fluids are already in a putreſcent ſtate, much food muſt not be given him at once; for his contracted ſtomach cannot digeſt it. Such a body muſt be ſupported with liquid nouriſhment, in ſmall quantities, and be treated altogether like a patient

a patient in a putrid or nervous fever. Hence, no animal food of any kind, but ſubacid vegetables alone, can be given with propriety.

2. *As to the quality of aliment*, we muſt here inveſtigate the nature of *Digeſtion*. This function may be aptly divided into two different proceſſes: *Solution* and *Aſſimilation*. Solution takes place in the ſtomach, where the food is changed into a pulp, where it is diſſolved according to its greater or leſs ſolubility, and where its nouriſhing particles are abſorbed. Aſſimilation only begins, when the ſolution has already taken place in the ſtomach, when the nutritive ſubſtance, or the alimentary juice, is inhaled by the abſorbent veſſels, and conducted to the blood, by means of the lacteals. Aſſimilation, therefore, is that function, by which the aliment is as it were animalized: and hence it has been conjectured, that animal food is eaſier digeſted than vegetable, as being more analogous to our nature, and more eaſily converted into animal fluids.

There are articles of eaſy and of difficult digeſtion, in the animal as well as in the vegetable kingdom: in both we find ſome ſubſtances, which are completely indigeſtible, and which paſs through the alimentary canal, without affording any nouriſhment.

The moſt ſimple diſhes are the moſt nouriſhing. The multiplied combinations of ſubſtances, though they may pleaſe the palate, are not conducive to

health. All ſubſtances containing much jelly, whether animal or vegetable, are nouriſhing; for this alone affords nutriment; and the hard, watery, and ſaline particles of food cannot be aſſimilated or converted into chyle. Nouriſhing ſubſtances would, indeed, be more conformable to Nature; but, as our appetite generally incites us to eat ſomewhat more than is neceſſary, we ſhould acquire too much alimentary matter, and become too full of blood, if we were to chooſe only ſuch articles of food as contain a great quantity of jelly.

Dr. BUCHAN very juſtly obſerves, that "the "great art of preparing food is to blend the "nutritive part of the aliment with a ſufficient "quantity of ſome light farinaceous ſubſtance, in "order to fill up the canal, without overcharging "it with more nutritious particles than are "neceſſary for the ſupport of the animal. This "may be done either by bread or other fari-"naceous ſubſtances, of which there is a great "variety." Thoſe, who are not employed in hard labour or exerciſe, do not require ſuch nouriſhing food, as thoſe, whoſe nutritive fluids are in part conſumed by muſcular exertions and violent perſpiration. Such as have ſuffered frequent loſſes of blood, from whatever cauſe, will beſt reſtore it by ſtrong aliment; which, on the contrary, ought to be avoided by the plethoric. Thoſe, laſtly, whoſe frame is weakened and emaciated by irregularities and diſſipation, ſhould not attempt to

eat

eat much at a time, but rather repeat their meals more frequently, at proper and regular intervals.

Whether we ought to make uſe of articles of eaſy or difficult digeſtion, cannot be determined by general rules: every perſon muſt attend to the effects, which ſubſtances of different degrees of digeſtibility produce on his ſtomach. The chyle, when prepared of ſubſtances not eaſily digeſtible, is ſolid and concentrated, and conſequently affords a ſubſtantial muſcular fibre: but ſuch ſubſtances as the ſtomach cannot digeſt, ought never to be uſed as food.

It is an important rule of diet, *to eat if poſſible of one kind of meat only*, or, at all events, *to eat of that diſh firſt, which is the moſt palatable.* The ſtomach is enabled to prepare the beſt chyle from ſimple ſubſtances, and will thence produce the moſt healthy fluids. And if we follow the ſecond part of this rule, we are in no danger of overloading the ſtomach. At a table dietetically arranged, we ought to begin with thoſe diſhes, which are moſt difficult to be digeſted, and finiſh our meal with the moſt eaſy; becauſe the former require ſtronger digeſtive powers, and more bile and ſaliva, all of which become defective towards the end of a heavy meal. The power of digeſtion in the ſtomach is undoubtedly moſt vigorous and active, when that organ is not too much diſtended; and the more coarſe ſubſtances alſo require a longer time for being duly aſſimilated.

To begin meals, as the French, Germans, and Scots generally do, with *ſoups* or *broths*, is highly improper and noxious. Theſe liquid diſhes are ill-calculated to prepare the ſtomach for the reception of ſolid food; as they not only weaken and ſwell it by their bulk and weight, but alſo deprive it of the appetite for the ſucceeding part of the dinner. Every tenſion is attended with relaxation, ſo that we imagine ourſelves ſatisfied ſooner than we are in reality. Beſides, broths and ſoups require little digeſtion, weaken the ſtomach, and are attended with all the pernicious effects of other warm and relaxing drinks. They are beneficial to the ſick, to the aged, and to thoſe who, from the want of teeth, have loſt the power of maſtication; but for ſuch perſons they ought to be ſufficiently diluted, and not too much heated with ſpices;—otherwiſe they will be digeſted with ſome difficulty.

Many individuals are accuſtomed to ſpend the whole forenoon without breakfaſt, and feel no inconvenience from it, while others of a more delicate ſtomach could not bear ſuch abſtinence, without unavoidable cravings and debility. The buſineſs of digeſtion is uſually accompliſhed within three or four hours after a meal; hence, the ſtomach is empty at riſing in the morning, and the body often enfeebled by long faſting. Our breakfaſt ſhould therefore conſiſt of more ſolid and nouriſhing ſubſtances, than are now generally uſed for that meal; eſpecially

eſpecially if our dinner is to be delayed till the late hours which modern faſhion preſcribes. We ſhould breakfaſt ſoon after we get up, dine about mid-day, and not protract the hour of ſupper till the time which Nature points out for reſt.

A principal rule of diet is to take food with an eaſy and ſerene mind; hence it is preferable to dine or ſup in company: our food has thus more reliſh, it agrees better with us, and we eat more ſlowly and cheerfully. But we ought not to indulge ourſelves in ſitting too long at table, which is always pernicious to health. For digeſtion takes place, even while we ſit at table; and as the ſtomach, when gradually ſupplied, craves for additional quantities of food, eſpecially when a variety of palatable diſhes ſtimulates the appetite, we ought to be much on our guard againſt theſe ſeductions. Hence it is moſt adviſable to make our dinner on one or two diſhes; becauſe we can eat more of a plurality of diſhes than of one or two only, and do not ſo eaſily perceive when the ſtomach is overloaded.—To read, or otherwiſe exerciſe the mind, during the time of eating, is likewiſe improper.

Gentle exerciſe, before dinner or ſupper, is very conducive to increaſe our appetite, by promoting the circulation of the blood. But too violent exerciſe impairs the appetite, and weakens the powers of the ſtomach, by means of its ſympathy with the other parts of the body. In proof of this, we ſeldom ſee people worn out with fatigue able to partake

partake of their uſual repaſts. The exerciſe, however gentle, ought to be over at leaſt half an hour before dinner; becauſe it is hurtful to ſit down to table immediately after great fatigue.

As to our conduct *after dinner*, it is ſcarcely poſſible to give rules that are generally applicable, and much leſs ſo to every individual. From the contradictory opinion of the moſt eſteemed authors, they appear not to have diſcriminated between the various ſtates and conditions of animal life; and as exerciſe was found to agree with ſome conſtitutions, and to diſagree with others, a diverſity of opinions neceſſarily aroſe among thoſe who were ſo paſſionately fond of reducing every thing to general rules. In order then to remove theſe difficulties, I think it neceſſary to obſerve, that though it be apparently conſiſtent with the inſtinct of nature to reſt ſome time after dinner, according to the example of animals, yet this time, as well as other concurrent circumſtances, deſerves to be more preciſely determined.

As ſoon as the food has entered the ſtomach, the important office of digeſtion begins: the vigour of the organs exerted on this occaſion ought certainly not to be abridged by violent exerciſe; but muſcular and robuſt people feel no inconvenience from gentle motion about *one* hour after the heavieſt meal. On the contrary, it is highly probable that the abdominal muſcles receive additional impetus, by exertions of a moderate kind.

But

But as the whole proceſs of digeſtion is of much longer duration than is generally imagined, the afternoon-hours cannot be employed advantageouſly to health, in any labour requiring ſtrong exertions.

The tranſition of the alimentary fluid into blood, which takes place in the third or fourth hour after a meal, and in ſome people of a weak and ſlow digeſtion much later, is always attended with ſome increaſe of irritability, which, in perſons of great ſenſibility, may degenerate into a painful ſenſation or illneſs. At this time, therefore, nervous and hypochondriac perſons are frequently troubled with their uſual paroxyſms; they are ſeized with anguiſh, oppreſſion, and an inclination to faint, without any external cauſe. Perſons in this condition of body, as well as all febrile patients, and eſpecially thoſe who are troubled with ſtomachic complaints, would act extremely wrong and imprudent, to undertake any exerciſe whatever, before their victuals be completely digeſted; as during digeſtion all the fluids collect towards the ſtomach. In violent exerciſe, or in an increaſed ſtate of perſpiration, the fluids are forced to the external parts, and withdrawn from the ſtomach, where they are indiſpenſable to aſſiſt the proper concoction.

As to the propriety of *ſleeping after dinner*, we may learn from thoſe animals, which ſleep after feeding, that a little indulgence of this kind cannot be

be hurtful. Yet this again cannot be eſtabliſhed as a general rule among men. For the animals which ſleep after food, are for the moſt part ſupplied with articles of ſo very difficult digeſtion, and ſo hard in their nature, that great digeſtive powers are required to convert them into alimentary matter. Hence this practice can be recommended only to the nervous and debilitated, to weakly perſons in general, who are much employed in mental exerciſe, and are paſt the middle age—eſpecially after a heavy meal, in hot weather, and warm climates.

Experience, however, teaches us, that, in this reſpect, a ſhort ſleep, of a few minutes only, is ſufficient and preferable to one of longer duration; for, in the latter caſe, we loſe more by an increaſe of inſenſible perſpiration, than is conducive to digeſtion.—But the poſition of the body is far from being a matter of indifference. The beſt is a reclined and not a horizontal poſture, from which head-ach may eaſily ariſe, when the ſtomach preſſes upon the ſubjacent inteſtines, and the blood is thereby impelled to the head. The old practice of ſtanding or walking after dinner is ſo far improper, as it is hurtful to take exerciſe, while the ſtomach is diſtended by food, the ſenſation of which laſts at leaſt for one hour.

In the primitive ages, people ſubſiſted chiefly upon plants and fruits. Even to this day, many ſects and whole nations, the Bramins for inſtance, abſtain

abſtain from the uſe of animal food. The ancient Germans, alſo, who were ſo renowned for their bodily ſtrength, lived upon acorns, wood apples, ſour milk, and other productions of their then uncultivated ſoil. In the preſent mode of life, here as well as on the Continent, a great proportion of the poorer claſs of country-people ſubſiſt chiefly on vegetables; but although they duly digeſt their vegetable aliment, and become vigorous, yet it is certain, that animal food would anſwer theſe purpoſes much better. Hence in countries where the labouring claſs of people live principally upon animal food, they far excel in bodily ſtrength and duration of life.

A popular writer obſerves, that "animal food "is leſs adapted to the ſedentary than the labo- "rious, whoſe diet ought to conſiſt chiefly of "vegetables. Indulging in animal food renders "men dull and unfit for the purſuits of ſcience, "eſpecially when it is accompanied with the free "uſe of ſtrong liquors." This is ſo far true, but Dr. Buchan ought to have added, that the infirm, and thoſe who labour under complaints of indigeſtion, will ſuffer ſtill more from the uſe of vegetable ſubſtances, which by their peculiar nature produce too much acid, and require ſtronger digeſtive organs, in order to be changed into a good alimentary fluid.

Dr. Buchan farther obſerves, that "conſump- "tions ſo common in England, are in part owing

"to

" to the great uſe of animal food." To this aſſertion no one will give his aſſent, who is acquainted with that claſs of men, who carry on the buſineſs of butchers, among whom it is as rare to hear of a conſumptive perſon, as it is to find a ſailor troubled with the hypochondriaſis. I muſt quote another obſervation of this gentleman, to which I cannot implicitly ſubſcribe. Having remarked, that the moſt common diſeaſe in this country is the ſcurvy; that we find a taint of it in almoſt every family, and in ſome a very deep taint, he ſays,—" that a diſeaſe ſo general muſt have a " *general cauſe*, and there is *none ſo obvious*, as the " great quantity of animal food devoured by the " natives. As a proof, that ſcurvy ariſes from " this cauſe, we are in poſſeſſion of no remedy " for that diſeaſe equal to the free uſe of freſh " vegetables." He likewiſe remarks, " that the " choleric diſpoſition of the Engliſh is almoſt pro- " verbial, and if he were to aſſign a cauſe of it, " it would be their living ſo much on animal " food;" and finally, that " there is no doubt " but this induces a ferocity of temper unknown " to men, whoſe food is chiefly taken from the " vegetable kingdom."

There is much truth mingled with much fallacy in theſe aſſertions. I will allow, that animal food prediſpoſes people to ſcorbutic complaints, and that it renders men more bold and ſanguinary in their temper; but there are a variety of other

cauſes

cauſes which produce a ſimilar effect. Nor are the Engliſh ſo choleric a people as the Italians and Turks, both of whom, though ſparing in the uſe of animal food, are uncommonly vindictive. It is farther not to be imputed to the conſumption of fleſh-meat, or the want of vegetables alone, that the ſcurvy is ſo frequent in this country, both on land and at ſea. There appears to me to exiſt a powerful cauſe, to which people pay very little attention, and from which the ſcurvy more frequently derives its origin than from any other; the difference of food being in fact only a concurrent cauſe.

If we conſider the very ſudden and frequent changes of temperature in our climate; if we compare the preſent mode of living with that of our anceſtors, who did not interrupt the digeſtion of one meal by another, ſuch as our rich luncheons in the forenoon, and our tea and coffee in the afternoon, when the digeſtive organs are, as it were, drowned in theſe favourite liquids;—if, farther, we reflect upon the irregular manner in which our time of repoſe is arranged, ſo that we ſpend a great part of our life in the unwholeſome night-air, partly at late ſuppers, and partly in the modern practice of travelling at night;—if all theſe circumſtances be duly weighed, we cannot be at a loſs to diſcover a more general cauſe of ſcorbutic complaints, than that of eating too much animal food.

After

After theſe reflections, it will not be difficult to comprehend, that the moſt important of the human functions is materially injured, by theſe habitual irregularities. I allude to the *inſenſible perſpiration*, which is ſo far from being encouraged and ſupported by ſuch conduct, that the noxious particles, which ought to be evaporated, are daily and hourly repelled, again abſorbed by the lacteals, and reconducted to the maſs of the circulating fluids. Here they can produce no other effect than that of tainting the humours with acrimonious particles, and diſpoſing them to a ſtate of putreſcency and diſſolution, which is the leading ſymptom of ſcurvy. Upon the minuteſt inquiries among ſea-faring people, as well as the inhabitants of the country, I have been informed, that thoſe individuals, who pay due attention to the ſtate of their ſkin, by wearing flannel ſhirts and worſted ſtockings, and by not expoſing themſelves too often to night-air, or other irregularities, are ſeldom, if ever, troubled with ſcurvy.

To return to the ſubject of animal food and its effects, it deſerves to be remarked, that a too frequent and exceſſive uſe of it diſpoſes the fluids to putrefaction, and, I believe in ſome ſanguine temperaments, communicates to the mind a degree of ferocity. Nations living chiefly upon the fleſh of animals, like the Tartars, are in general more fierce than others; and the ſame effect is manifeſt in carnivorous animals: they emit a very diſagreeable

able ſmell, and both their fleſh and milk has an unpleaſant and diſguſting taſte. Even a child will refuſe the breaſt, when its nurſe has eaten too much animal food. Thoſe who eat great quantities of meat, and little bread or vegetables, muſt neceſſarily acquire an offenſive breath. It appears, therefore, to be moſt ſuitable and conducive to health, to combine animal with vegetable food, in due proportions. This cannot be minutely aſcertained, with reſpect to every individual; but, in general, two thirds or three fourths of vegetables, to one third or fourth part of meat, appears to be the moſt proper. By this judicious mixture, we may avoid the diſeaſes ariſing from a too copious uſe of either. Much, however, depends on the peculiar properties of alimentary ſubſtances, belonging to one or the other of the different claſſes, which we have now to inveſtigate.

Of Animal Food.

It may ſerve as a preliminary rule, that *freſh meat* is the moſt wholeſome and nouriſhing. To preſerve theſe qualities, however, it ought to be dreſſed ſo as to remain tender and juicy; for by this means it will be eaſily digeſted, and afford moſt nouriſhment.

The fleſh of *tame* animals is, upon the whole, preferable to *game*; and although the latter be, in general, more mellow, and eaſier of digeſtion, it

does not contain the ſweet jelly, and mild juices, with which the former is almoſt uniformly impregnated.

By the uſual mode of dreſſing victuals, they loſe a conſiderable part of their nutritious quality, and become thereby leſs digeſtible. *Raw meat* certainly contains the pureſt and moſt nouriſhing juice. We do not, however, eat raw fleſh, but there are ſome ſubſtances which are frequently conſumed in a ſtate nearly approaching to that of rawneſs. Such are the Weſtphalia hams, Italian ſauſages, ſmoked geeſe, ſalted herrings, and the like.

Various modes of preparing and dreſſing meat have been contrived, to render it more palatable, and better adapted to the ſtomach. By expoſure to the air, fleſh becomes more ſoft, which obviouſly is the effect of incipient putrefaction; for, by this proceſs, the volatile particles of ammoniacal ſalt are diſengaged, and it is rendered more agreeable to the taſte. Pickled and ſmoked meats *, ſo commonly uſed in the northern and eaſtern countries of Europe, acquire an unnatural hardneſs,

* It is remarkable, that *ſmoked meat* is more readily digeſted in a *raw* than boiled ſtate. Experience affords ample proof of this aſſertion, eſpecially in the articles of ſmoked hams and ſauſages: for the ſoft gelatinous fluids which, by the joint proceſſes of pickling and ſmoking, have been effectually decompoſed, or converted into a neutral ſubſtance conſiſting of ammoniacal ſalt combined with animal jelly, are completely extracted by boiling, ſo that little more than the dry fleſhy fibres remain behind.

and

and communicate a great degree of acrimony to the fluids of the human body. By *boiling*, flesh is deprived of its nourishing juice, as the gelatinous substance of the meat is extracted, and incorporated in the broth; and it is thus converted into a less nutritive and more oppressive burden for the digestive organs; because the spirituous and balsamic particles are too much evaporated during the boiling. The *broth* indeed contains the most nourishing part of it, but it is too much diluted to admit of an easy digestion. A better mode of dressing meat is *roasting*, by which its strength is less wasted, and the spirituous particles prevented from evaporating; a crust is soon formed on its surface, and the nutritive principle better preserved. Hence, one pound of roasted meat is, in actual nourishment, equal to two or three pounds of boiled meat.

The boiling of animal food is frequently performed in open vessels; which is not the best method of rendering it tender, palatable, and nourishing: close vessels only ought to be used for that purpose. The culinary process called *stewing* is of all others the most profitable and nutritious, and best calculated to preserve and to concentrate the most substantial parts of animal food.

When we expose articles of provision to the fire, without any addition of moisture, it is called *baking*. That such articles may not be too much dried by evaporation, they are usually covered

with paſte. Thus the meat, indeed, retains all its nutritive particles, becomes tender and eaſily digeſtible; but the paſte is the more detrimental to the ſtomach, as it generally conſiſts of an undue proportion of butter, which cannot be readily digeſted in that ſtate. When meat is *fried*, it is in ſome degree deprived of its ſubſtance; but, if the fire be ſtrong enough, a ſolid cruſt will ſoon be formed on its ſurface, by which the evaporation will be checked, and the fleſh rendered mellow: the butter, or other fat uſed to prevent its adherence to the pan, gives it a burnt or empyreumatic taſte, and renders its digeſtion in the ſtomach rather difficult.

Vegetables are, in general, not ſo readily digeſted, as even hard and tough animal ſubſtances; which from their nature are more ſpeedily aſſimilated to the body; but the fleſh of young animals, with a proportionate quantity of wholeſome vegetables, is the diet beſt adapted to our ſyſtem. The fleſh of fattened cattle is by no means wholeſome; theſe animals lead a ſluggiſh and inactive life, and as they are ſurrounded in their dungeons by a bad and putrid air, they conſequently do not afford fluids ſalutary for the ſtomach.

Though fat meat is more nouriſhing than lean, fat being the cellular ſubſtance of animal jelly, yet to digeſt this oily matter, there is required, on account of its difficult ſolubility, a good bile, much ſaliva, and a vigorous ſtomach. To pre-

vent

vent any bad effects, we ought to uſe a ſufficient quantity of ſalt, which is an excellent ſolvent of fat, and changes it into a ſaponaceous maſs.

Luxury has introduced an unnatural operation, which makes the fleſh of certain animals at once delicate and nutritious; but the fleſh of the ſame animals is ſtill more wholeſome in their unmutilated ſtate, before they have been ſuffered to copulate. The mucilaginous and gelatinous parts of animals alone afford nouriſhment; and according to the proportion of theſe contained in the meat, it is more or leſs nouriſhing. We find mucilage to be a principal conſtituent in vegetable, and jelly or gluten, in animal bodies: hence farinaceous ſubſtances contain the moſt of the former, and the fleſh of animals, moſt of the latter. A ſubſtantial jelly, as for inſtance that of calf's feet, is more nouriſhing than a thin chicken broth; but it is more difficult to be digeſted.

In ſummer, it is adviſable to increaſe the proportion of vegetable food, and to make uſe of acids, ſuch as vinegar, lemons, oranges, and the like; the blood being in that ſeaſon much diſpoſed to putreſcency. The man who continually takes nouriſhing food, is liable to become fat and plethoric; while on the contrary the parſimonious, or the religious fanatic, from their abſtinence, become thin and enfeebled: hence the medium, or a proper mixture of both vegetable and animal nutri-

ment, ſeems to be moſt conducive to health. I cannot ſufficiently recommend the following caution to thoſe who are frequently troubled with a craving appetite: the more food the ſtomach demands, it ought to be the more ſparingly furniſhed with ſtrongly nouriſhing ſubſtances, in order to avoid obeſity, or fatneſs; and much vegetable food is in this caſe required, to counteract that diſpoſition to putreſcency, which the frequent eating of nutritive ſubſtances neceſſarily occaſions.

There are people who feel the ſenſation of hunger in a painful degree, which generally ariſes from too much acid being generated in the ſtomach. A vegetable diet would be prejudicial to ſuch individuals; they ought to increaſe the proportion of animal food; and diſhes containing oily ſubſtances, in general, agree well with them. Bread and butter is uſeful to ſuch perſons, in order to neutralize their acid acrimony, and at the ſame time, to change the fat into a more ſoluble ſaponaceous ſubſtance. The cauſe of this acid is frequently a weakneſs in the ſtomach, which cannot be cured in any other manner, than by ſtrengthening bitters, and articles of nouriſhment that are mildly aſtringent, and promote warmth in the inteſtines; and in this reſpect, cold meat, as well as drink, is preferable to hot.

The jelly of animals being the very ſubſtance, which renovates the ſolid parts, is obviouſly ſerviceable and neceſſary to nouriſh the human body.

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As, however, each kind of animal has its peculiar jelly and fat, which can be nouriſhing only when aſſimilated to our nature by the digeſtive organs, and as the different parts of animals require different degrees of digeſtion, it will be neceſſary to enter into more minute inquiries, reſpecting theſe particulars.

Experience informs us, that the fleſh and inteſtines of young animals afford a thin, eaſily digeſtible, and nutritive jelly. Old animals, hard and tough fleſh, cartilages, ſinews, ligaments, membranes, membranous thick inteſtines, and the ſinewy parts of the legs, produce a ſtrong and viſcid jelly, which is difficult to be digeſted and aſſimilated to our fluids. The more healthy the animal is, the ſtronger will be the jelly, and the more nouriſhing its fluids. The moſt nutritious fleſh is that of animals living in the open air, having much exercíſe and a copious maſs of blood, and particularly, if they are kept in dry and warm places. The alkali contained in the fleſh of carnivorous animals is the cauſe of the bad nouriſhment it affords, and of the injurious conſequences attending its uſe. From the ſimilarity in the ſtructure of quadrupeds to that of man, it may be conjectured, that their jelly is ſimilar to ours; that ſuch as are fed upon milk give the beſt nouriſhment; and that the fleſh of female animals is more eaſily digeſted, but leſs nutritious than that of the caſtrated males, which in every reſpect deſerves the preference. After

quadrupeds, we may claſs birds, in point of nouriſhment; then fiſhes; next to them amphibious animals; and laſtly inſects.

As animal food is ſtrongly nouriſhing, it generates blood, fat, and ſpirituous particles, in a much greater quantity than vegetable aliment. The activity and courage of carnivorous animals prove, that the feeding upon fleſh gives ſpirit and ſtrength, heats the body, and preſerves the muſcles in a lively ſtate. For theſe reaſons, much animal food is improper for thoſe of a full habit and abundance of blood, for febrile patients, and thoſe who are diſpoſed to hemorrhages or loſſes of blood. The phlegmatic, on the contrary, and thoſe of thin watery fluids, and a weak digeſtion, may with ſafety eat more animal than vegetable food.—Of the different kinds of fleſh, game is moſt heating; that of young domeſtic animals leaſt; for inſtance, of calves and chickens, particularly when they are eaten with vegetable ſubſtances containing an acid, ſuch as ſorrel, aſparagus, &c. That animal food diſpoſes to putreſcency, I have before remarked; hence it ought to be ſparingly uſed in ſummer, and in hot climates. Perſons, whoſe fluids already ſhow a putrid tendency, and who are reminded of it by frequent eruptions of the ſkin, or who are already corpulent, ſhould abſtain from a too copious uſe of animal food.

I have alſo obſerved, that the fleſh of carnivorous animals has an extraordinary tendency to putrefaction,

trefaction, as is obvious from their fetid perſpiration; that it contains an acrimony and alkaleſcency foreign to our nature; and that it does not afford mild nutriment. The fleſh of graniverous animals, partaking more of the vegetable principle, is leſs ſubject to putrefaction; and though it be leſs nouriſhing, and leſs abounding in ſpirituous particles than that of the former, yet it ſupplies us with a milder and more congenial aliment.

The fleſh of fiſhes, being, like the element in which they live, moſt diſtinct from the nature of man, is of all others the leaſt wholeſome and nutritive.

The tame quadrupeds that ſuck the mother's milk, if they reſt too much and are quickly fed, do not afford a good and well-prepared food. In animals, which have tender muſcles and little exerciſe, thoſe parts are probably the moſt wholeſome which are more in motion than others, ſuch as the legs and head.

Poultry furniſhes us with the moſt valuable aliment, as it has excellent and well-digeſted fluids, from its more frequent exerciſe and conſtant reſidence in the open and pure air. Some animals, when young, have tough and ſpongy fleſh, which is mollified and improved by age, and can be eaten only after a certain time, ſuch as eels and carp. Others are hard when young, and muſt be uſed early, becauſe that hardneſs

increaſes

increaſes with their age; as the haddock, and many other ſpecies of fiſh. The fleſh of old animals, that have leſs muſcular parts than the young ones of the ſame ſpecies, is indigeſtible; and we may lay it down as a general rule, that the more the fleſh of an animal is diſpoſed to putrefaction, it is the more unwholeſome.

Veal, although affording leſs nutriment than the fleſh of the ſame animal in a ſtate of maturity, contains many nouriſhing and earthy particles, and produces little or no diſpoſition to flatulency: it ought, however, not to be brought to market, till the calf is at leaſt ſix weeks old, and fed, if poſſible, on the mother's milk. Veal is not of a heating nature, and may therefore be allowed to febrile patients in a very weak ſtate, eſpecially with the addition of ſome acid;—it is alſo the moſt proper food for perſons who have a diſpoſition to hemorrhages. On account of the great proportion it contains of viſcidity, perſons diſpoſed to phlegm and complaints of the abdomen, ought to abſtain from its uſe. For theſe reaſons, we recommend veal-broth, eſpecially in pectoral and inflammatory diſeaſes. The lungs, the liver, and the tongue of veal, are leſs viſcous than the fleſh; and being eaſily digeſted, ſoft, and mild, they are very proper for ſick perſons and convaleſcents. No animal fat is lighter than this; it ſhows the leaſt diſpoſition to putreſcency; and it may therefore be uſed, in preference to any other, by perſons of a ſcorbutic

a ſcorbutic taint. The fat of veal ſhould not be boiled; the operation of boiling ſoftens its fibres too much, diſſolves the jelly, and renders it unfit for digeſtion. But, by roaſting, it becomes drier, and ſomewhat more ſolid; both the ſerous and thick parts of the blood are incraſſated in the external veſſels, the fibres are dried up, and a cruſt is formed, beneath which the fluids are moved, and changed into vapour, by the continued application of heat. In this operation all the fibres lie, as it were, in a vapour-bath, and are perfectly ſoftened without loſing any of the jelly. Roaſting, therefore, may be conſidered as the beſt mode of preparing this meat. Baking alſo forms a cruſt over it like roaſting, but the fat incraſſated by heat may occaſion inconvenience, as it poſſeſſes an oily acrimony, and is with difficulty digeſted. For the ſame reaſon, it is improper to eat the burnt cruſt of any meat, of which ſome people are particularly fond, though it contains an empyreumatic oil, highly pernicious, and altogether indigeſtible by the ſtomach. For roaſting, the mellow and juicy kidney-piece, or the breaſt of veal, deſerves the preference: the leg is too dry and fibrous; it requires good teeth to be well chewed, renders the uſe of tooth-picks more neceſſary than any other diſh, and is frequently troubleſome to the ſtomach. In ſhort, veal does not agree well with weak and indolent ſtomachs, which require to be exerciſed with a firmer ſpecies of meat. When boiled, it is

but ſlightly nouriſhing, and when we make a meal upon veal alone, we ſoon feel a renewal of the cravings of the appetite. For removing the acid from the ſtomach, veal is the moſt improper article of diet. But to patients recovering from indiſpoſition, firſt may be given veal-broth, then roaſted veal, and laſtly beef; the properties of which we ſhall now conſider *.

Beef affords much good, animating, and ſtrong nouriſhment; and no other food is equal to the fleſh of a bullock of a middle age. On account of its heating nature it ought not to be uſed, where there is already an abundance of heat; and perſons of a violent temper ſhould eat it in moderation. It is peculiarly ſerviceable to hard-working men; and its fat is nearly as eaſily digeſted as that of veal.

It deſerves, however, to be remarked, that the tongue, the inteſtines or tripe, and the ſauſages made of beef are more difficult of digeſtion than the muſcular part; and that it would be extremely improper to give them to nurſes, children, or lying-in women.

* A horrid cuſtom has been introduced by luxury, of feeding calves cooped up in boxes ſo ſmall as to prevent all motion, and from which light is totally excluded: by this cruel refinement their fleſh is, by epicures, thought to be rendered more white and delicate; but if humanity does not revolt at this practice, thoſe who have any regard for health ſhould avoid the uſe of the fleſh of an animal reared in this unnatural and putreſcent ſtate.

The meat of old bullocks, fed and kept in the ſtall, when unfit for labour, is ſcarcely digeſtible; it is burdenſome to the ſtomach, and contains, as well as that of old cows, (which is ſtill worſe) no wholeſome fluids. Though beef be more frequently eaten boiled, yet it is more nouriſhing and digeſtible when roaſted. Finally, beef is almoſt the only ſpecies of animal food, with which the ſtomach is not eaſily ſurfeited, and which is in proper ſeaſon throughout the whole year.

Pork yields a copious and permanent nouriſhment, which does not diſagree with the robuſt and laborious, but which, from its abundance of acrid fat, is not wholeſome to perſons of a weak ſtomach or ſedentary life; as theſe animals live and are fed in ſties without exerciſe, and in an impure air. From the want of clean water, their fleſh acquires a tough and ſtrong conſiſtence, and is indigeſtible but by a ſtrong and healthy bile. Perſons who have impure fluids, and a tendency to eruptions, as well as thoſe who have wounds or ulcers, ſhould refrain from the uſe of pork; for this food will diſpoſe them to inflammation and gangrene: it is equally improper in a catarrhal ſtate of the breaſt, in weak ſtomachs, coughs, and conſumptions.

The antient phyſicians conſidered pork as the beſt and moſt nutritious meat, if ſupported by proper digeſtive powers. But they were certainly miſtaken in this ſuppoſition; for, although its quality

lity is ſuch as renders a ſmaller quantity of it neceſſary to ſatisfy the cravings of the ſtomach, yet veal and beef, taken in increaſed proportions, afford equal, if not more nouriſhment, and doubtleſs a more wholeſome ſupply of animal jelly, than pork, under ſimilar circumſtances of the individual, would produce. By allowing theſe animals clean food, and the enjoyment of pure air and exerciſe, their fleſh might be much improved in ſalubrity; but the farmer is little anxious about the quality of the meat, if he can produce it in greater quantity, which he is certain to obtain from the preſent unnatural mode of feeding ſwine. People of delicate habits may ſometimes eat pork ſparingly; but it is an erroneous notion that it requires a dram to aſſiſt its digeſtion; for ſpirituous liquors may indeed prevent, but cannot promote its ſolution in the ſtomach. It would be much better to drink nothing after pork for a ſhort time, as it is uſually very fat, and this fat is more ſubtle and ſoluble than any other, and has nothing in it of the nature of tallow.

Pork, eaten in moderation, is eaſily digeſted. With thoſe whoſe digeſtive organs are weak, no other ſpecies of meat agrees in general ſo well, as a ſmall quantity of this. Hence the objections made againſt it relate more to the quantity than to the quality or ſubſtance; for if it be eaten in too great quantity, it is apt to corrupt the fluids, and to produce acrimony. We ought therefore to eat

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it ſeldom and ſparingly, and the appetite which many people have for this food ſhould be kept within moderate bounds. The moſt proper additions to pork, are the acidulated vegetables, ſuch as gooſeberry or apple-ſauce; which not only gratify the palate, but correct its properties, neutralize, in a manner, its great proportion of fat, and thus operate beneficially on the alimentary canal *.

The fleſh of *wild hogs*, as they have more exerciſe than the tame, and do not live upon ſubſtances ſo impure and corrupted, is more palatable, more eaſily digeſted, leſs tough, not ſo fat, and on account of their reſidence in the open air, is, like all game, purer, but more liable to pütrefaction.

Smoked hams are a very ſtrong food. If eaten at a proper time, they are a wholeſome ſtimulus to the ſtomach; but boiling them renders the

* There is little to be apprehended from the worms in ſwine, which, according to a late diſcovery of the celebrated Naturaliſt Götze, in Germany, are natural to theſe animals. They reſide in the cartilaginous veſicles of the liver, and when theſe veſicles burſt in very hot weather, while the worms are yet extremely ſmall, they paſs into the blood with other fluids, and gradually increaſe in ſize. But there is no inſtance, that they have produced diſeaſes, unleſs ariſing from diſguſt. Should it, however, be found, that theſe animalculæ become viſible externally, and in great quantities, the butchers ought not to be permitted to kill ſuch hogs, as the fleſh eaſily acquires an uncommon acrimony, is much diſpoſed to putrify, and conſequently improper to be uſed as food.

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digeſtion ſtill more difficult.—In *ſalting* any kind of meat, much of its jelly is waſhed away, the fibres become ſtiff, and thus heavier for the ſtomach. The ſalt penetrates into the jelly itſelf, prevents its ſolution in the alimentary canal, and conſequently makes it leſs conducive to nutrition.—By *ſmoking*, the fibres of meat are covered with a varniſh, the jelly is half burnt, the heat of the chimney occaſions the ſalt to concentrate, and the fat between the muſcles to become rancid; ſo that ſuch meat, although it may ſtimulate the palate of the epicure, cannot be wholeſome.

Sauſages, whether fried or boiled, are a ſubſtantial kind of nouriſhment; they require, therefore, a ſtrong bile to diſſolve them, and a good ſtomach to digeſt them. They are not of an acrid nature, provided they have not too much pepper in their compoſition, and be cloſely filled, ſo as to contain no air. *Blood Sauſages*, uſually called Black Puddings, conſiſting of bacon and coagulated blood, which is totally indigeſtible, are a bad and ill-contrived article of food; and ſtill more ſo, if they have been ſtrongly ſmoked, by which proceſs the blood becomes indurated, and the bacon more rancid: thus prepared, nothing can be more pernicious and deſtructive to the beſt fortified ſtomach. The ſpices uſually added to ſauſages, correct, in ſome degree, their hurtful properties, but are inſufficient to counteract the bad and highly diſagreeable effects of rancid ſubſtances.

Bacon is chiefly hardened fat, accumulated in the cellular texture under the ſkin, and is of all meat the moſt unwholeſome; it eaſily turns rancid in the ſtomach, or it is ſo already by long hanging, and is particularly pernicious to thoſe who are ſubject to the heartburn.

Lard, a ſofter fat collected from the entrails and the meſentery of hogs, becomes eaſily rancid, and is otherwiſe relaxing to the digeſtive organs: for which reaſons, it is ſeldom uſed in Engliſh cookery.

The *mutton* of ſheep fed on dry paſtures is a better and more nouriſhing food than that of others reared in moiſt places. Thoſe alſo fed upon the ſea-ſhore are excellent meat, the ſaline particles which they imbibe giving at once conſiſtency and purity to their fleſh. The fleſh of rams is tough and unpleaſant, but that of ewes, and ſtill more that of wethers, is of a rich, viſcous nature. Young mutton is juicy and eaſily digeſted, but it is rather tough, and has not that balſamic alimentary juice peculiar to ſheep above a certain age. The beſt mutton is that of ſheep not leſs than three, and not above ſix years old. Under three years of age, it has not attained its perfection and flavour.

A roaſting piece of mutton ought to be expoſed to the open air for ſeveral days, according to the weather and ſeaſon; it affords then a palatable diſh, which is eaſily digeſted, and agrees with every

conſtitution. But the fat of mutton is almoſt indigeſtible; for it eaſily coagulates in the ſtomach, and oppreſſes that organ: hence the lean part of mutton is more nouriſhing and conducive to health.—The feet of this animal are nouriſhing, on account of their jelly, and are of great ſervice for injections, in thoſe diſeaſes which originate from acrimony in the inteſtines.

Lamb is a light and wholeſome food, not ſo nutritious as mutton, but extremely proper for delicate ſtomachs. The vegetables moſt proper to be eaten with lamb are thoſe of an acidulated nature, as gooſeberries, ſorrel, and the like. It is faſhionable to eat this meat when very young; but a lamb that has been allowed to ſuck ſix months, is fatter and more muſcular, and in every reſpect better, than one which has been killed when two months old, and before it has had time to attain its proper conſiſtency.

Houſe-Lamb is a diſh, prized merely becauſe it is unſeaſonable. Like all animals reared in an unnatural manner, its fleſh is inſipid and detrimental to health.

The fleſh of *Goats* is hard, indigeſtible, and unwholeſome; hence the meat of kids only is eſculent, being more eaſily digeſted, and yielding a good nouriſhment.

The fleſh of *Deer* (*Veniſon*), and that of *Hare*, contain much good nutriment; but, to the detriment of health, theſe animals are generally eaten

eaten when half putrified, though they are naturally much diſpoſed to putreſcency. When properly dreſſed, they afford a mellow food, and are readily aſſimilitated to our fluids. But as wild animals, from their conſtant motion and exerciſe, acquire a drier ſort of fleſh than that of the tame, it ſhould never be boiled, but always ought to be roaſted or ſtewed. From the ſame cauſe, the fluids of wild animals are more heating, and more apt to putrify, than thoſe of the domeſtic. Perſons, therefore, who already have a prediſpoſition to ſcurvy or other putrid diſeaſes, ſhould not eat much game, particularly in ſummer. This pernicious tendency of game may be corrected by the addition of vinegar, acid of lemons, or wine; ſalad alſo is very proper to be eaten with it. Thoſe parts of wild animals, which have the leaſt motion, are the moſt juicy and palatable: the back, for inſtance, is the beſt part of a hare.

The *lungs* of animals contain nothing but air and blood-veſſels, which are very tough, ſolid, difficult to be digeſted, and afford little nouriſhment. Beſides, on account of the encyſted breath, and the mucus contained in them, they are in reality diſguſting. The *liver*, from its dry and earthy conſiſtence, produces a vitiated chyle, and obſtructs the veſſels; hence it requires a great quantity of drink, and ought never to be uſed by the plethoric: the blood-veſſels and biliary parts adhering to it, are particularly diſagreeable. The *heart* is dry,

ſcarcely digeſtible, and not very nouriſhing. The *kidneys* alſo are acrid, hard, tough, and not eaſily digeſted by the delicate. Theſe inteſtines, however, of young animals, ſuch as calves and lambs, produce aliment ſufficiently wholeſome.

The *fat* and *marrow* of animals afford, indeed, ſolid and elaſtic alimentary juice, increaſe the blood and fluids, but are difficult to be digeſted; they require a powerful ſtomach, perfect maſtication, ſufficient ſaliva and bile, and agree beſt with perſons who take much bodily exerciſe. If not duly digeſted, they occaſion diarrhœa, weaken the ſtomach and the bowels, ſtimulate too much by their uncommon acrimony, and eaſily turn rancid, eſpecially when eaten together with meat much diſpoſed to putrefaction. They are apt to deſtroy the elaſtic power of the firſt paſſages, as well as of the whole body, to produce the heart-burn, cramp of the ſtomach, and head-ach, particularly in irritable habits, and, at length, to generate an impure and acrimonious blood.

The *blood* of animals is completely inſoluble, conſequently in no degree nouriſhing.

The *milk* is of very different conſiſtence and properties, not only according to the different kinds and ſpecies of animals, but alſo in the ſame ſpecies, in conſequence of the difference in feeding, conſtitution of body, age, time of milking, and ſo forth. Milk takes the lead among the articles of nouriſhment. It affords the beſt nutriment to perſons whoſe

whoſe lacteals and blood-veſſels are too weak for deriving nouriſhment from other proviſions; becauſe it is already converted into an alimentary fluid in the inteſtines of an animal.

Nature has appointed this nutritive ſubſtance, milk, as the food of children; becauſe infants, on account of their growth, require much nouriſhment. From this circumſtance, we may alſo conclude, that milk is eaſily digeſted by healthy ſtomachs, ſince at this early age the digeſtive powers are but feeble. Milk-porridge, however, as well as thoſe diſhes in the compoſition of which milk and flour are uſed, have a manifeſt tendency to obſtruct the lacteals or milk-veſſels of the inteſtines and the meſentery; a circumſtance which renders them extremely unwholeſome, particularly to children. Milk, although an animal production, does not readily undergo putrefaction; as it is poſſeſſed of the properties of vegetable aliment, and turns ſooner ſour than putrid. It affords a ſubſtantial alimentary fluid; and hence it is of ſervice to perſons enfeebled by diſſipation or diſeaſe.

As the milk of animals contains more cream than that of the human breaſt, it ought to be diluted with water, when given to infants. It combines both ſaccharine and oily particles, and is a very ſerviceable article of diet, in a putreſcent ſtate of the blood, in inveterate ulcers, and in the ſcurvy. It is well calculated to aſſuage rigidity, cramps,

and pains, being a diluent and attenuating remedy, *eſpecially in the ſtate of whey*; it promotes perſpiration and evacuation in general, and is highly beneficial in ſpitting of blood, hyſterics, hypochondriaſis, dyſentery, inveterate coughs, convulſive affections, the putrid ſore throat, and in complaints ariſing from worms. Milk is alſo uſed for fomentations, baths, emollient injections, and waſhes for inflamed and ſore parts. If intended as a medicine, it ſhould be drunk immediately or ſoon after it comes from the cow. Through boiling, and even by long ſtanding, the beſt and moſt nutritious balſamic particles evaporate.

The milk to be employed for diet in diſeaſes ought to be taken from healthy and well-nouriſhed animals; for we ſee in children how much depends on the health of the mother, and how ſuddenly they ſuffer from an unhealthy or paſſionate nurſe. In Spring and Summer, the milk is peculiarly good and wholeſome, on account of the ſalubrious nouriſhment of herbs. In Winter it is much inferior. It is farther neceſſary, that the animal furniſhing the milk ſhould be kept in the free air, and have daily exerciſe. In order to obtain good milk, it would be adviſable, for perſons who have the opportunity, to keep a cow; for, beſides the adulteration of that which is ſold, cows are frequently milked at an improper time, by which the milk is much injured, and cannot be wholeſome.

The beſt milk is obtained from the cow at three or four years of age, about three months after producing the calf, and in a ſerene Spring morning. Good cow's milk ought to be white, without any ſmell; and ſo fat, that a drop being allowed to fall on the nail will not run down in diviſions. It is lighter, but contains more watery parts than the milk of ſheep and goats; while, on the other hand, it is more thick and heavy than the milk of aſſes and mares, which come neareſt the conſiſtence of human milk. Ewe's milk is rich and nouriſhing; and it yields much butter, which is ſo unſavoury, that it cannot be eaten. Both this and goat's milk produce much cheeſe, which is tough, ſtrong, pungent, and difficult to be digeſted.

As goats are fond of aſtringent herbs, their milk is ſuperior in ſtrength to that of other animals; hence it has been ſometimes uſed with the moſt happy ſucceſs in hyſteric caſes.—Goat's whey and aſs's milk are chiefly uſed in pulmonary conſumptions; where aſs's milk cannot be got, that of mares may be uſed as a ſubſtitute *.

Milk conſiſts of caſeous, butyraceous, and watery parts; that which contains a well-propor-

* *Artificial aſs's milk*, not inferior in its properties to the natural, may be made by the following proceſs:—Take of eryngo-root or ſea-holly, and pearl barley, each half an ounce; liquorice-root three ounces; water two pounds or one quart; boil it down over a gentle fire to one pint, then ſtrain it, and add an equal quantity of new cow's milk.

tioned mixture of the three, is the moſt wholeſome. But this mixture is not always met with in due proportion — frequently the two firſt, namely, cheeſe and butter, predominate; and in this caſe it affords indeed a ſtrong food, but is difficult of digeſtion. If the water form the greateſt proportion, it is then eaſily digeſted, but leſs nouriſhing. This is particularly the caſe with aſs's milk, which, more than any other, affects the urine and ſtool, while it has a tendency to purify the blood.

On account of the warmth, and the mechanical proceſs of the digeſtive organ, joined to the chemical properties of the acid generated in it, milk neceſſarily coagulates in every ſtomach. The caſeous part is diſſolved, and diluted by the admixture of the digeſtive liquors, and thus prepared for being changed into a pure chyle or milky fluid. Indeed, it makes no difference, whether we take cream, cheeſe, and whey in ſucceſſion, or whether we conſume them united in the maſs of the milk: in the former caſe, the ſeparation takes place without, and in the latter, within the ſtomach.

It is however improper to eat acid ſubſtances together with milk, as this maſs would occaſion fermentation and corruption: while, on the contrary, the natural coagulation is only a ſeparation of the conſtituent parts, not a tranſition of this mild fluid into the ſtage of acid fermentation; for this is prevented by the ſaponaceous digeſtive liquors, though the milk itſelf be coagulated.

Yet

Yet milk is not a proper food for the debilitated, in all caſes; nay, under certain circumſtances, it may even be hurtful. It does not, for inſtance, agree with hypochondriacs; as it occaſions cramp of the ſtomach, cholic, heartburn, and diarrhœa. Febrile patients, whoſe weak organs of digeſtion do not admit of nutritive food, and whoſe preternatural heat would too eaſily change the milk into a rancid maſs, muſt abſtain from it altogether. It diſagrees alſo with the plethoric, the phlegmatic, and the corpulent; but particularly with tipplers, or thoſe addicted to ſtrong ſpirits. Its butyrous and cheeſy parts may obſtruct digeſtion and oppreſs the ſtomach.

Laſtly, *ſour milk* is unfit for uſe, on account of the chemical decompoſition which has taken place in its conſtituent parts, and becauſe it can hardly be digeſted by the moſt powerful ſtomach: even ſweet milk ought not to be eaten together with fleſh meat, and in moſt caſes the whey is preferable to the milk.

With theſe exceptions, milk is an excellent ſpecies of diet, which does not require ſtrong digeſtive organs, unleſs a variety of other ſubſtances be eaten along with it. On the contrary, perſons much reduced in bodily vigour have received benefit, and in a great meaſure been cured, by eating milk only. We daily obſerve that children at the breaſt, with the natural inclination to acidity and viſcoſity, feel its bad effects only, when, together

with milk, they are fed upon cakes, paſtry, gingerbread, and other traſh. Milk being free from all acrimony, produces wholeſome, light, and ſweet blood. Sugar and ſalt are almoſt the only proper ſpices to be added to it.

Cream is exceedingly nouriſhing, but too fat and difficult to be digeſted, in a ſedentary life.

Butter poſſeſſes at once all the good and bad properties of expreſſed vegetable oils; it is the ſooner tainted with a rancid bitter taſte, if it be not ſufficiently freed from the butter-milk, after churning.—Bread and butter require ſtrong and well-exerciſed powers of digeſtion.—It is a moſt pernicious food to hot-tempered and bilious perſons, as well as to thoſe of an impure ſtomach. The good quality of butter is marked by a very fat ſhining ſurface, yellow colour, agreeable flavor, and ſweet taſte *.

Butter-milk is a ſpecies of whey, but contains a great number of butyrous particles. If we drink it while new and ſweet, it is refreſhing and cooling.

* I am diſpoſed to think, it would be beneficial to ſociety, if the making of *butter* were ſtrictly prohibited, as well as the importation of ſalt-butter into every civilized country, where the hurtful properties of it are ſufficiently underſtood.—*Melted fat*, or the *drippings* of baked and roaſted meat, is equally, if not more pernicious to the ſtomach, than even ſtale butter, and both ought to be uſed only for greaſing cart-wheels, and not for injuring human organs.

Before

Before I quit the ſubject of milk, I cannot omit remarking, that this fluid, beſides the qualities before enumerated, contains ſome ſpirituous parts, *in a latent ſtate*, with which our chemiſts are little acquainted. And although theſe parts cannot be diſengaged from the milk, and exhibited in a ſeparate form, yet it is certain, that the Perſians, and other inhabitants of the Eaſt, prepare a kind of wine from milk, which poſſeſſes all the properties of intoxicating liquors. Such is the report of reſpectable travellers; but I am inclined to ſuſpect, that theſe Orientals make ſome addition to the ſweet whey, after the caſeous parts are ſeparated from it, by which they induce a vinous fermentation. Whether they add honey, ſugar, or any mucilaginous vegetable, containing the ſaccharine principle, I ſhall not attempt to decide: but it is well known, that the Chineſe ferment and diſtil a liquor from a mixture of rice and veal, which is not unpleaſant when new.

Cheeſe is obtained from the tough part of the milk, which ſubſides in coagulation, and which muſt be completely freed from the whey. All cheeſe is difficult to be digeſted, being the coarſeſt and moſt glutinous part of the milk, which the healthy and laborious only can concoct in their ſtomach. To others, it is too heavy; it imparts a thick and acrid chyle to the blood; it hardens in a weak ſtomach, and accumulates an indurated earthy lump. When eaten new, in any conſider-

able

able quantity, it corrupts the fluids; and if old, it becomes putrid. In ſmall quantities after dinner, it can do no great harm, but it is abſurd to ſuppoſe that it aſſiſts digeſtion; its effects, at beſt, being of a negative kind, that is, by producing a temporary ſtimulus on the ſtomach: and even this is the caſe only with found old cheeſe which is neither too fat, nor too far advanced in the proceſs of putrefaction.

Toaſted cheeſe, though more agreeable to ſome palates than raw, is ſtill more indigeſtible. Cheeſe, if too much ſalted, like that of the Dutch, acquires, when old, a pernicious acrimony. The green Cheeſe of Switzerland, which is mixed with a powder of the wild Melilot, or the *Trifolium Melilotus*, L., and the milder Sage-Cheeſes prepared in England, are the almoſt only kind which may be eaten without injury; and even theſe ſhould be uſed in moderation *.

Birds,

* To ſhow the ſtrongly viſcid quality of cheeſe, and what powers of digeſtion it muſt require to aſſimilate it to our fluids, I ſhall mention a compoſition which may be uſeful, as the ſtrongeſt cement yet contrived, for mending china-cups, glaſſes, and the like. A piece of Cheſhire or Glouceſter cheeſe is boiled in three or four different waters, till it form a ſoft and elaſtic maſs, freed of the whey and other extraneous ingredients. After having expreſſed all the water from this maſs, and while yet warm, it muſt be gradually rubbed upon a piece of marble, ſuch as is uſed by colourmen; and as much unſlacked or quick-lime in powder muſt be added, as will be abſorbed by the cheeſe, without making it

Birds, as they move in the pureſt and moſt healthy atmoſphere, poſſeſs the beſt prepared and moſt wholeſome alimentary ſubſtance; yet the fleſh of birds, though more eaſily digeſted, is leſs nouriſhing than that of quadrupeds; as on account of their conſtant exerciſe the whole winged tribe have drier muſcles, conſequently a leſs nutritious juice. Thoſe birds particularly, which ſubſiſt upon worms, inſects, and fiſhes, are not wholeſome; and if they frequent ſwampy and filthy places, their fleſh will afford meagre and impure nouriſhment.

Some parts of fowls are leſs wholeſome than others. The wings of thoſe whoſe principal exerciſe is flying, and the legs of thoſe that generally run, are the drieſt parts of their bodies: hence the breaſt is, in all, the ſofteſt and moſt nutritive part. Young poultry is preferable to that of ſome years old, which have very tough muſcles, and are heavier to the ſtomach.

Birds living upon grain and berries are in all reſpects the beſt; next, thoſe feeding upon inſects; and laſt of all, that claſs of birds which preys and ſubſiſts upon fiſhes. Theſe indeed, like all other animals, whoſe proper food is fleſh, are eaten only by ſavage nations, wild and tame ducks and

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it too hard. This compound forms the ſtrongeſt poſſible cement; if allowed to dry ſlowly, it is able to withſtand fire as well as water.

geeſe

geeſe excepted; which, by their ſtrong fleſh, and the inclination of their fluids to putreſcency, are leſs wholeſome than any other bird. Water-fowl afford the leaſt beneficial food. In general we find winged animals out of ſeaſon in Spring; partly becauſe moſt of them are then pairing, and partly on account of the long journeys of thoſe that are birds of paſſage, by which they become leaner than at any other time of the year; yet ſome birds of paſſage do not arrive in this climate till towards Autumn.

It is remarkable, that moſt birds, when taken from their wild ſtate, and fed in captivity, ſuch as partridges, larks, and others, loſe much of their peculiar flavour, which is alſo the caſe with wild quadrupeds. Yet thoſe tame and domeſticated fowls and animals, that are well fed in yards and ſtalls, are generally more fat and muſcular, than thoſe which are obliged to ſeek their own food. Old fowls are the moſt ſerviceable for broth; or they might be boiled in cloſe veſſels, where they can macerate for ſome hours, till they are completely ſoftened by the ſteam. Fowls loſe much of their fine flavour, if boiled; they are therefore beſt roaſted, except the ſmaller kinds, which ought to be baked.

All birds living upon grain and berries afford good nutriment, except geeſe and ducks. The fleſh of the gooſe is unwholeſome, eſpecially when fed in ſmall incloſures, without exerciſe; which

practice is ſometimes carried ſo far, as cruelly to nail the animal to a board through the feet, to prevent its motion. Its fat is almoſt totally indigeſtible: its fleſh produces a very obvious and bad effect upon wounds and ulcers. It is alſo pernicious to thoſe who are diſpoſed to inflammatory diſeaſes, and to cutaneous eruptions.—A young hen, or chicken, is a very wholeſome diſh; its vegetable aliment produces a mild and ſweet chyle; and the whiteneſs of its fleſh ſhows its excellent quality. As it is eaſily digeſted, it is a diſh to be recommended to the weak and debilitated; and it agrees beſt with individuals of an acrid and mucous tendency, or ſuch as are troubled with biliary and ſtomachic diſorders.

The Capon is one of the moſt delicate diſhes; if eaten when young, he yields a ſtrong and good chyle; his fleſh is not of a heating nature, is not diſpoſed to putreſcency, and the fat itſelf is eaſily digeſted. Turkeys, as well as Guinea or India fowls, yield a ſtrong aliment, but are more difficult of digeſtion than the capon; particularly the legs, wings, and fat. Theſe birds, when roaſted, are uſually filled with ſome kind of heavy pudding, which is a favourite morſel with many, but requires the ſtrongeſt digeſtive powers.—The old prejudices, that the fleſh of capons is productive of the gout, and that of ſparrows brings on epileptic fits, are too abſurd to require refutation.

Among

Among the birds ſubſiſting on inſects, there are few eaten, except the various kinds of ſnipes and ſtarlings. All of them, without exception, conſiſt of hard, unſavoury, and ſcarcely digeſtible fleſh.

It would be uſeleſs to enumerate the various birds living upon fiſh, which are eaten in other countries. They all have a taſte of fiſh, and afford a poor aliment. The ducks and geeſe only are eaten in Britain: of theſe the former afford the better nouriſhment, as they are generally not ſo abundantly fat as the latter, and are permitted to move about in the open air. But they ought not to be ſuffered to repair to ſtagnant waters, which they ſwallow, and which taint their fluids and fleſh with qualities detrimental to health.

Next to milk, no nutriment is ſo ſimple and ſalutary as that of bird's *eggs*, among which thoſe of hens juſtly deſerve the preference, in reſpect of nouriſhment, taſte, and digeſtion. The albumen, or the white of eggs, correſponds to our ſerum, or the water of the blood; it is diſſolved in a warm temperature, but conſiderable heat makes it hard, tough, dry, and inſoluble. The yolk of eggs is more ſoluble, contains much oil, and is uncommonly nouriſhing, but has a ſtrong tendency to putrefaction: hence eggs muſt be eaten while freſh. People of a weak ſtomach ought to eat no kind of food eaſily putreſcible, conſequently no eggs. To thoſe, on the contrary, who digeſt well,

a freſh

a freſh egg, boiled ſoft, (or rather ſtewed in hot water, from five to ten minutes, without allowing it to boil) is a very light, proper, and, at the ſame time, nouriſhing food.

Hard-boiled eggs, fried eggs, pan-cakes, and all artificial preparations of eggs, are heavy on the ſtomach, corrupt our fluids, and are unwholeſome. The eggs of ducks and geeſe ought not to be eaten, but by perſons of the moſt active and powerful ſtomachs. All eggs require a ſufficient quantity of ſalt, to promote their ſolution in the digeſtive organ; yet butter renders them ſtill more difficult of digeſtion: hence it is equally abſurd and pernicious to uſe much butter, with a view to ſoften hard boiled eggs. We cannot be too circumſpect in the uſe of eggs, as to their freſhneſs; for there are examples, of perſons, after having uſed corrupted, or only tainted eggs, being ſeized with putrid fevers *.

Fiſh,

* Various modes of preſerving eggs have been contrived in domeſtic life. To prevent the external air from pervading the egg, is the principal requiſite. With this intention ſome ſmear them with butter, others pack them in bran or common ſalt; the farmers in Germany ſuſpend them in freſh river-water, by means of a net; but all theſe methods are troubleſome and uncertain. The beſt way of preſerving them to any length of time, is to place them in a very ſtrong lime-water, to leave ſome lime at the bottom of the veſſel, and if the water ſhould become turbid, to pour it off and ſupply it with a freſh infuſion. This may be done with boiling water, to diſſolve more of the lime; but

Fish, though of a tender fleſh, afford upon the whole but a weak nouriſhment. They are more or leſs difficult to digeſt, according to the different kinds of water in which they live. Being of all animal ſubſtances the moſt putreſcible, they are much inferior in quality to birds and quadrupeds, on which account they ought not to be eaten by

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it muſt be allowed to become perfectly cold before the eggs are placed in it.

I ſhall here take notice of a method lately contrived to preſerve animal and vegetable ſubſtances, to almoſt any length of time, without ſalting or pickling. A Mr. Donaldson has obtained his Majeſty's Letters Patent, for inventing a powder, which is ſaid to poſſeſs the extraordinary virtues of preſerving the fleſh of animals, as well as vegetable roots, to an indefinite length of time. If this be true, (though I am much inclined to doubt it) it is eaſy to conceive how the Egyptian mummies could be preſerved for ſeveral thouſand years. Our Eaſt and Weſt India veſſels may now ſave themſelves the trouble of taking live ſtock on board.

In order to afford an opportunity of judging of the merits of Mr. Donaldſon's powder, or of giving it a fair trial, I ſhall briefly ſtate its component parts, as recorded in the Patent. —Any quantity of vegetable gum, ſuch as Gum Arabic, or that of cherry-trees, in fine powder, is mixed with an equal quantity of fine flour of wheat or barley: this is made into a paſte, and baked in an oven, contrived for that purpoſe, with a very gentle heat, ſo as to prevent it from forming a cruſt. The dry maſs is again reduced to a fine powder, and this is the great and aſtoniſhing *preſervative*.—Either animal or vegetable ſubſtances ſurrounded with this powder, and packed in cloſe boxes in that ſtate, according to the profeſſions of the Patentee, keep freſh, and free from corruption, for almoſt any length of time.—*Relata refero.*

febrile

febrile patients and convaleſcents. Their fat is ſtill more inſoluble and indigeſtible than that of other animals, and readily turns rancid. On account of their indifferent qualities, no ſatiety is more noxious than that of fiſh.

Acid ſauces and pickles, calculated to reſiſt putrefaction, render fiſh ſomewhat better, and more wholeſome for the ſtomach, while butter has a tendency to prevent digeſtion, and to promote the corruption of their fleſh. On the contrary, ſpice and ſalt, uſed in moderate quantities, ſtimulate the fibres of the ſtomach to exert their action, and facilitate the digeſtive proceſs.

Fiſh dried in the open air, and afterwards boiled ſoft, are eaſily digeſted; but all *ſalted* ſea-fiſh, as well as ſmoked fiſh, are injurious to the ſtomach, and afford little nutrition. The ſame remark, though in an inferior degree, applies to fiſh preſerved in vinegar and ſpice. In general, the heads and tails containing the leaſt fat, are the lighteſt parts for digeſtion, as on the contrary the belly is the heavieſt. Such as have a tender fleſh are ſooner digeſted than thoſe of a hard and tough conſiſtence.

The ſoft and mucilaginous fiſhes, like the eel, are partly compoſed of an oily ſlime, partly of tough fibres, and are conſequently not eaſily digeſted. Thoſe living in ponds, ditches, and other ſtanding waters, are certainly leſs wholeſome than river fiſh, whoſe exerciſe is greater, and whoſe

natural element is purer. For ſtanding water eaſily putrifies, and the fiſh lodging in the mire of ſuch reſervoirs, continually feed upon the putrid parts. But the ſame kind of river fiſh is alſo of different qualities, according to their different nouriſhment. Thus, thoſe caught in rivers contiguous to great towns, are leſs ſalubrious than others; becauſe they neceſſarily receive great quantities of the impurities thrown into ſuch rivers.

Salt-water fiſh are perhaps the beſt of any, as their fleſh is more ſolid, more agreeable, and healthy, leſs expoſed to putreſcency, and leſs viſcid. Theſe excellent qualities they poſſeſs when freſh; when ſalted, they have all the properties of ſalt-fleſh, and conſequently its diſadvantages. With reſpect to *herrings*, it is certain, that of all the ſea-fiſh they are moſt eaſily digeſted: and ſalt-herrings, in particular, if eaten in ſmall quantities, diſſolve the ſlime in the ſtomach, ſtimulate the appetite, create thirſt, and do not readily putrify by long keeping.

Among the *amphibious animals*, the legs of frogs are in ſome countries eſteemed a delicate diſh; yet, as they contain a large portion of fat, the ſtomach cannot eaſily digeſt them, without the addition of much ſalt. The ſame obſervation applies to the Turtle, as well as the Weſt-Indian Guana, a ſpecies of Lizard, two or three feet long, of a moſt forbidding appearance; but its

fleſh,

flesh is delicate and salubrious, much resembling that of a chicken.—We also eat lobsters and crabs, which are species of water-insects: as both of them, however, generally arrive at a stage approaching to putrefaction, before they are sold in inland towns, their consumption is attended with considerable danger. Besides, the flesh of lobsters, in particular, is not easily digested, as it possesses a peculiar acrimony, which in swallowing sometimes occasions pain in the throat. Some people, it is said, have been affected with eruptions of the skin, pain in the stomach, and rheumatisms, arising from the use of lobsters. Their jelly, however, is mild and nourishing *.

Oysters

* The flesh of *river-lobsters* is more delicate than that of the sea-lobster; but it is at the same time more subject to putrefaction, and ought therefore to be used in a fresh state, with much salt or vinegar. In Germany and other parts of the Continent, lake and river-lobsters are always boiled alive, and generally in milk; a dish much esteemed in families, and of which children are particularly fond.—The Germans cook various species of fresh-water-fish in milk: and although palatable dishes may thus be prepared, yet, on account of the incongruous variety of substances, I cannot approve of the mixture. There is, however, a method of obtaining from lobsters a very excellent and wholesome jelly, the particulars of which I shall here communicate to the reader, upon the authority of a respectable physician at Hamburgh. "Take the flesh of about thirty river-lobsters sufficiently boiled; cut it in small pieces, and place it in a capacious earthen vessel, over a gentle fire, with one ounce of fresh butter. After the butter is completely absorbed, add the clean flesh and skin of two calves' feet, and four

Oyſters are eaten both raw, and dreſſed: when raw, they are in every reſpect preferable; for, by cooking, they are deprived of the ſalt-water which promotes their digeſtion in the human ſtomach, as well as of a great proportion of their nouriſhing jelly. Raw oyſters are eaſily digeſted, and may be eaten, with great advantage, by the robuſt, as well as by the weak and conſumptive; as this ſhell-fiſh poſſeſſes more nutritive animal jelly than almoſt any other. They farther are generally attended with a laxative effect, if eaten in any quantity: hence they afford an excellent ſupper to thoſe liable to coſtiveneſs.

Snails, though ſeldom eaten in this country, are equally nouriſhing and wholeſome. On account of their gelatinous nature, they have lately been much uſed againſt conſumptions; and as theſe complaints are now very frequent in Britain, it were to be wiſhed that ſuch patients may give this

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quarts of pure ſoft water. Theſe ingredients muſt be ſimmered over a moderate fire, till the whole of the maſs amount to rather more than one quart. In that ſtate, half a drachm of powdered nutmeg, and a handful of chervil, muſt be added; and after having allowed it to boil up again, the pureſt part of this maſs is to be preſſed through a ſtrong linen cloth. When placed, for ſome hours, in a cellar or ſome other cool place, it forms a ſtrong jelly, two or three ſpoonfuls of which will impart uncommon richneſs and flavour to a baſonful of common veal or chicken broth."—I make no doubt that a ſimilar jelly may be prepared of ſmall ſea-lobſters, if they can be had alive.

remedy

remedy a fair trial, by boiling a dozen of the red garden-ſnails every evening in a quart of ſweet milk or whey, for half an hour, then ſtraining the liquor through a coarſe cloth, and drinking it with ſugar every morning gradually upon an empty ſtomach; and repeating theſe draughts for a month or two, if required. This red garden-ſnail (or the *Helix Pomatia*, L.) has alſo been uſed externally in the open hemorrhoids, where freſh ſnails were applied, every two or three hours, in a raw ſtate, with remarkable ſucceſs.

Muſcles are of a more ſolid texture, and therefore not ſo eaſily digeſted as oyſters. The ſea-muſcles afford a hard, indigeſtible, and, as ſome imagine, poiſonous food. Although the examples of their deleterious nature be very rare, yet they ought not to be eaten without vinegar, or ſome other vegetable acid, acting as a corrector of their bad qualities, or, in the opinion of others, as an antidote.

Of Vegetable Aliment.

The various articles of nouriſhment we derive from the Vegetable Kingdom, may with propriety be divided into five orders:

1ſt, The different ſpecies of farina, or grain, ſuch as wheat, rye, barley, and oats.

2d, The legumes, or pulſe, ſuch as peas, beans, &c.

3d, The various kinds of ſalads and pot-herbs.

4th, All the different roots; and

5th, Fruit, or the production of trees and ſhrubs.

The firſt of theſe, namely the farinaceous, are very nouriſhing, on account of the copious mucilage they contain; but they are likewiſe difficult to digeſt. Bread itſelf, though juſtly called *the ſtaff of life*, if eaten too freely, or to ſerve as a meal, produces viſcidity or ſlime, obſtructs the inteſtines, and lays the foundation of habitual coſtiveneſs. All diſhes prepared of flour, are not only nouriſhing, but are emollient, attenuating, and correct acrimony. Leavened bread, or ſuch as has acquired an acidulated taſte by a ſlow fermentation of the dough, is cooling and antiſeptic; a circumſtance well eſtabliſhed by experience. By this proceſs of preparing the dough, all the tough parts are moſt intimately mixed with the drier parts of the flour, and the fixed air is expelled in baking. New-baked bread always contains much of an indigeſtible paſte, which is remedied, either by allowing it to dry for two or three days, or by toaſting it. This ought to be done regularly, particularly in times of ſcarcity, both on account of health and economy. Stale bread, in every reſpect, deſerves the preference: and perſons troubled with flatulency, cramp of the ſtomach, and indigeſtion, ſhould not upon any account eat new bread, and ſtill leſs, hot rolls and butter. Indeed, all paſtry whatever is unwholeſome, eſpecially when hot. Thoſe who

devour

devour hot pies with avidity, ſhould conſider, that they contain an uncommon quantity of air, which diſtends the ſtomach, and produces the moſt alarming and dangerous colics, and incurable obſtructions, inſomuch that the ſtomach and bowels have been known to burſt. The porous quality of bread ariſes from the fixed air having been expelled in baking; and the more ſpongy the bread, it is the more wholeſome. But new-baked bread, and rolls in particular, require a ſound ſtomach; becauſe they contain much mucilage, not having parted with all their moiſture; and wheat-flour is more viſcid than that of rye, which is the bread-corn of moſt nations on the Continent.

Bread and butter, together with cheeſe, as they are eaten in Holland and Germany, form a maſs ſcarcely digeſtible. The external ſurface of bread, or the cruſt, which has been more dried by the heat of the oven, is eaſieſt digeſted; it contains the empyreumatic part, expelled by fire from the flour; it produces an emollient effect on the bowels; but, at the ſame time, is more heating and leſs nouriſhing than the ſofter part, or crumb.

The great difference in bread is owing, partly to the different ſpecies of grain from which it is made, partly to the time the flour has been kept; for, when new, it is more difficult to deprive it of its tenacity; partly to its being more or leſs cleaned from the bran; partly to the different methods of fermenting and baking it; to the difference in the

water

water with which the flour has been kneaded; and laſtly, to the various ingredients of which the paſte has been compounded. The ſoftneſs of the mill-ſtones uſed in grinding the flour, may alſo vitiate the bread, by introducing particles of ſand and marble, ſo as to make it equally noxious to the teeth, and oppreſſive to the ſtomach. Well-baked, and thoroughly dried bread, is eaſily diſſolved by water, without rendering it viſcid or gelatinous: hence it is well adapted for the uſe of the debilitated, as well as for every age or temperament.

Haſty-pudding, on account of its tenacity, and the quantity of mucilage it contains, is not ſo eaſily digeſted as people, who feed their infants upon this diſh, are apt to imagine. Porridge made of oatmeal, the common food of children and the lower claſs of adults in Scotland, is not ſo heavy as that of wheat-flour; though both of them require vigorous digeſtive organs, robuſt conſtitutions, and ſtrong exerciſe, in order to produce a proper nutriment.

The *vermicelli*, and *macarone* of the Italians, as well as all the different diſhes made of flour mixed up into paſte, and either boiled in water or ſtewed in butter, are ill calculated for patients and convaleſcents, to whom they are frequently adminiſtered. A paſte, when it is ſo elaſtic that it can be formed into balls, is extremely difficult to be digeſted. All unfermented paſtry is exceſſively trying to the ſtomach;

ſtomach; and inſtead of wondering that the lovers of ſuch dainties are continually troubled with indigeſtion and other ſtomachic complaints, it would be againſt the order of things if it were otherwiſe.

Bread ought not to be eaten with every diſh; it is more uſeful and neceſſary with thoſe articles that contain much nouriſhment in a ſmall bulk, in order to give the ſtomach a proper degree of expanſion. Beſides, the addition of bread to animal food has another advantage, namely, that of preventing the diſguſt attending a too copious uſe of fleſh, and its ſtrong tendency to putrefaction. But if we accuſtom ourſelves to eat new-baked bread, to proviſions already indigeſtible in themſelves, ſuch as fat geeſe, bacon, blood-ſauſages, and the like, we make them ſtill more inſupportable to our digeſtive organs. Of the different kinds of grain, from which bread is prepared, that of rye is by far the moſt wholeſome for people of a ſedentary life, as well as the delicate and nervous. For though it be leſs nouriſhing, it is likewiſe leſs tenacious, and more eaſily digeſted, than bread made of wheat *.

Rice

* A few years ſince, when ſerious apprehenſions of an approaching famine were entertained, in conſequence of the ſcarcity, or rather the high price of flour in this country, the minds of men were ſedulouſly employed in reſearches tending to avert the impending calamity. Compoſitions of various ſubſtances to ſerve as ſubſtitutes for bread, ſuch as grey-

Rice contains a thin, unelaſtic, and eaſily ſoluble mucilage. It is one of the popular prejudices, that rice has a tendency to produce coſtiveneſs: this is only ſo far true as the uſe of it, by perſons of languid and debilitated conſtitutions, is ſometimes attended with flatulency, which ſufficiently accounts for its ſecondary effect. To avoid ſuch unpleaſant conſequences, rice ought to be eaten with the addition of ſome ſpice, ſuch as cinnamon, fennel, carraway, annis-ſeed, and the like; particularly by thoſe of a phlegmatic habit, and ſlow digeſtion.—In India, where this plentiful grain is almoſt the only food of the natives, it is regularly eaten with ſuch quantities of pepper, and other ſtrong ſpices, that Europeans, on their firſt arrival, cannot partake of this high-ſeaſoned diſh. From a cuſtom ſo beneficial in its phyſical effects, we may conclude, that the Indians, though directed more by inſtinct than ſcientific induction, are not altogether unacquainted with the rules of diet.

One of the beſt preparations of rice is the mucilage, or jelly, which is obtained by boiling two ounces of it ground to fine powder, and a quarter

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grey-peas, horſe-beans, potatoes, and many other farinaceous vegetables, were repeatedly tried. And although a very nouriſhing and palatable bread was formed of flour mixed with rice and potatoes, yet the prejudices of the lower, as well as the higher claſſes of the people, in favour of wheaten bread, were too great and inveterate, to admit ſo uſeful and beneficial an innovation.

of

of a pound of loaf-ſugar in one pint of water, until it becomes a tranſparent thick broth: this, when expreſſed through a cloth, and allowed to cool, is a palatable and wholeſome jelly.

Oats, when hulled or deprived of the huſk, and reduced to groats, are uſed as the common diſh for the infirm and ſick in England, France, and Germany. They impart to the water a thick mucilage, which, with the addition of a few currants boiled in it, is of a nouriſhing and ſlightly aperient quality.

Barley, or rather pearl-barley, may be uſed with a ſimilar intention, and is perhaps ſtill more nutritive; but, after decoction, the groſſer parts which remain ought not to be eaten.

Millet, or hirſe, is inferior to either oats or barley; it poſſeſſes too crude a mucilage for relaxed or inactive ſtomachs.

Manna-graſs (the *feſtuca fluitans*) is ſo called in Germany and Poland, becauſe its ſeeds have a remarkably ſweet and agreeable taſte, particularly before the plant comes to its full growth. It excels in richneſs and nutriment all the other vegetable productions of Europe; and, boiled in milk, it affords excellent ſoups as well as puddings. Two ounces of this manna, properly cooked in milk and water, would be a ſufficient meal for the moſt robuſt and laborious man. Boiled in water alone, in the proportion of one ounce to three pints of water evaporated to one quart, with the addition of

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ſome ſugar and white wine, it makes an agreeable and nouriſhing diſh for lying-in women and other patients for whom animal food is improper, and whoſe ſituation requires the occaſional ſtimulus of wine.

The *ſecond* order of vegetable aliment includes all the leguminous productions, as beans, peas, lentils, and the like; theſe contain a ſolid gluten or mucilage, and afford a rich and ſtrong nutriment, which beſt agrees with a vigorous ſtomach. They alſo have a conſiderable proportion of crude particles, which cannot be aſſimilated to our fluids, and muſt therefore remain undigeſted in the bowels, to the great detriment of the alimentary canal. The *meal* of the leguminous claſs is digeſted with more difficulty than that of grain; beſides, it contains much fixed air; on which account it is extremely flatulent, is apt to produce coſtiveneſs, and to communicate various kinds of acrimony to the blood. Theſe effects, however, it produces only when it is eaten too frequently and copiouſly. Hence bread, made of peas or beans, either alone or mixed and ground together with wheat, is improper for daily uſe.

Yet we muſt not imagine, that even the moſt wholeſome articles of food are altogether free from air: this element is a neceſſary and uſeful ingredient, to promote the digeſtion of alimentary ſubſtances.

ſtances. The proportion of fixed air varies extremely in different vegetables:—all the leguminous plants particularly abound with it; and even perſons with whom they agree well, muſt have experienced flatulency and torpor, after a copious uſe of peas or beans. Thoſe who are fond of peas-ſoup, would better conſult their health, by boiling the peas whole, than ſplit and deprived of their huſks; for theſe promote the grinding of the peas, and prevent them from turning acid in the ſtomach, which ſplit peas readily do, while they are apt to occaſion oppreſſion in the bowels, and a very troubleſome heart-burn.

Green peas, as well as *French beans*, boiled in their freſh ſtate, are equally agreeable and wholeſome; for they are leſs flatulent, and more eaſy of digeſtion, than in their ripe ſtate. It deſerves to be remarked, in general, that all vegetables of the pulſe kind, as they advance in growth, become more oppreſſive to the ſtomach, and conſequently leſs ſalutary in their effects.

The *third* order of Vegetables compriſes the various kinds of ſalads and herbs uſed in cooking, ſuch as greens, cabbage, ſpinage, and the like. Theſe contain a great proportion of water, and little nouriſhment: they ſerve to fill the ſtomach, reſiſt putrefaction, and may therefore be eaten more

more freely in ſummer than in winter; being, beſides, of a ſoftening, laxative, ſaponaceous, and conſequently ſolvent nature, they are well calculated to relieve the bowels. On account of their watery conſiſtence, they are of peculiar ſervice to lean people, to thoſe who loſe much moiſture by perſpiration, or who are troubled with fluſhings and undulations of the blood (in which caſe animal food is improper)—and as theſe vegetables aſſiſt inſenſible perſpiration, they are cooling, and aſſiſt all the emunctories of the body. Their nouriſhment is in proportion to the mucilage contained in them; but as this is in a very diluted ſtate, the aliment they afford is inconſiderable. They are further diſtinguiſhed by the earthy, acrid, and aërial particles which they contain, both with reſpect to their nutriment, and their effects upon the firſt paſſages. They become ſoft by boiling, many of the aërial particles are expelled, and they are thus rendered more digeſtible. But the practice of boiling them in large quantities of water, which is afterwards poured off, is extremely abſurd and injudicious; for, with the water, their beſt and moſt nutritious parts are conſequently thrown away: hence theſe vegetables ought to be thoroughly waſhed, and, cabbage excepted, ſtewed in a ſmall quantity of water, which will ſo far be reduced by ſlow boiling, that it may be brought to the table, together with the vegetables. To improve their reliſh, as well as to render theſe

vegetables

vegetables leſs flatulent, we generally add ſpices, which alſo aſſiſt digeſtion. And for the ſame reaſon, in a raw ſtate, they are eaten with vinegar, ſalt, pepper, and the like.

Salads, being in general eaten with oil and vinegar, call for all the powers of the ſtomach, to digeſt theſe liquids, together with the raw herbs. *Baked* vegetables with paſte and milk, as they are prepared in ſome countries, loſe all their principal virtues, and readily acquire an empyreumatic oil upon the cruſt, which is indigeſtible, and taints the fluids with a dangerous acrimony.

Aſparagus is an excellent article of nutriment, although ſomewhat flatulent and diuretic in its effects. The young ſhoots of this plant are not only the moſt palatable, but at the ſame time the moſt ſalutary.—As a good ſubſtitute for ſparrow-graſs, I can from experience recommend the *young buds of hops*, which are more eaſily procured, ſcarcely inferior to the former in taſte, and, on account of their aromatic quality, very grateful and wholeſome.

Artichokes afford a light and tender food, perhaps ſtill more nutritive but leſs diuretic than aſparagus; for this reaſon, they are preferable for culinary uſes.

Spinage, a favourite diſh with many, affords no nutriment, paſſes quickly through the ſtomach and bowels, almoſt undigeſted; and, being uſually dreſſed with butter, it weakens the alimentary canal,

produces looſeneſs, and conſequently is not proper food for the weak and debilitated.—In languid ſtomachs, ſpinage is apt to produce acidity and the heart-burn.

Sorrel poſſeſſes an acrid acidity, which deprives the teeth of their enamel, and ought to be avoided by thoſe who are already troubled with an acid taſte in the mouth.

Red Cabbage is one of the moſt indigeſtible vegetables, particularly as the French and Germans eat it, with ham and cheſnuts; it is thus rendered heating, flatulent, and laxative, and contains no nouriſhment.—More digeſtible, cooling, and leſs hurtful to the bowels, are the young ſprigs of cauliflower; but the moſt indigeſtible of all is the Colewort (*Caulis rapicius*). What has been ſaid with reſpect to cabbage, is applicable alſo to the Orach, or *Atriplex*, and the Lettuce, when eaten boiled or ſtewed.

White Cabbage is poſſeſſed of excellent properties; it is leſs flatulent than the common greens, and, being full of water, it is diuretic, and ſomewhat laxative.—It is remarkable, that all herbs and plants, in general, are more or leſs flatulent, according to their digeſtibility, and are diſpoſed to putreſcency, in proportion to the time they remain in the alimentary canal.

Of White Cabbage ſliced or cut in thin ſhreads, and afterwards ſeaſoned and ſalted, the Germans make *Sauer Kraut*; which is eaſily digeſted,

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on account of the ſalt mixed with it, and the acerous fermentation it has undergone, before it is uſed, and by which the greateſt part of its fixed air is expelled. Sauer Kraut may be preſerved freſh for a long time; it operates powerfully on the firſt paſſages, being one of the moſt excellent antiſeptics; it has proved of ſingular ſervice at ſea, in reſiſting the ravages of the ſcurvy, and curing it in the moſt alarming ſtages. We are indebted to Captain Cook, for introducing this ſalutary diſh among the ſailors, in ſpite of all prejudices, and thus preſerving the health of many brave mariners. Laſtly, Sauer Kraut has been found the beſt preventive againſt epidemic diſtempers, particularly againſt the dyſentery, and the putrid and petechial fevers, which it has even frequently cured.

Lettuce contains many nitrous particles, is very cooling, and uſeful in the evening to thoſe who cannot ſleep, from the too great heat and undulations of the blood. But the copious addition of oil and the yolk of eggs renders it leſs digeſtible than when eaten in its ſimple ſtate; but if theſe muſt be uſed, it is better to add ſome ſugar, which decompoſes theſe ſubſtances. The moſt ſuitable ingredients of Salads, beſides the Lettuce, are the various Creſſes, Chervil, *(Chaerophyllum bulboſum, Linn.)* and the ſcurvy-graſs, which, together with other cooling herbs, produce the effect of cleanſing the humours, or, as ſome ſay, of purify-

ing the blood, and are at the ſame time diuretic; eſpecially if eaten in Spring, and upon an empty ſtomach.

The *fourth* order of Vegetables conſiſts of all the eſculent roots, or ſuch as are uſed at our tables. They are either of the mild, or of the aſtringent and acrid kind. The former are much more nouriſhing and leſs flatulent than the latter, which however poſſeſs ſome medicinal powers, ſuch as the various ſpecies of radiſhes, onions, garlic, and the like.

Roots are neither ſo nouriſhing, nor ſo eaſily digeſted, as animal food. Yet we may conſider it as a certain rule, that any kind of aliment, for which we feel a natural and permanent appetite, is conformable to our nature. Of this kind is that beneficial root, the potato, which, in the moſt ſimple preparation, and without any addition, affords an agreeable and wholeſome food to almoſt every perſon, and particularly to children. It is one of the lighteſt alimentary ſubſtances, occaſioning neither viſcidity nor flatulence, and can be hurtful only, when immoderately uſed. But, being a dry vegetable, and containing many earthy particles, it requires a proper quantity of drink to prevent obſtructions. Its excellent nouriſhment is ſufficiently obvious in the healthineſs of thoſe country

country people, whoſe principal food is potatoes, as well as in animals that are fattened upon theſe roots.

The quickneſs with which the chyle made from potatoes is aſſimilated to the blood, leaves no doubt that they are eaſily digeſted; for it is a general remark, that labouring people ſooner feel a renewal of their appetite, after potatoes, than any other ſpecies of food. It is a groundleſs aſſertion, that they generate a thick and crude chyle, and conſequently a groſs and viſcous blood. It is an equally unfounded ſuppoſition, which is amply refuted by experience, that the potato is a narcotic root, and that it is apt to ſtupify the powers of the mind. This effect is produced only from a too copious uſe of it, together with want of exerciſe; in which caſes any other food would be attended with ſimilar conſequences.

The ſtimulating powers aſcribed to potatoes appear to me merely fanciful. Thoſe of a farinaceous conſiſtence are much more eaſily digeſted, than the heavy and gelatinous kind. The flour made of potatoes is more wholeſome for paſtry, and for all thoſe diſhes prepared of meal, than any other. The French have lately contrived a method of preparing a granulated flour from this root, which is grateful to the palate, and very nouriſhing. It is performed by a machine of ſimple conſtruction, a repreſentation of which, together with a deſcription, was given, ſome time

ago, in the Repertory of the Arts and Manufactures;—and it has alſo been uſed ſucceſsfully, when mixed with wheat flour, in making bread *.

The *Beet-root* contains a large proportion of ſaccharine matter. By the lateſt experiments of M. Achard, of Berlin, it has been proved, that about fourteen pounds weight produced one pound of raw ſugar, exceedingly ſweet, and without the intermixture of any other taſte. Independent of this conſideration, the beet is a valuable root, both in an economical and culinary reſpect; it is poſſeſſed of mild aperient qualities, and ought to be eaten more frequently, for ſupper, by thoſe who are of a coſtive habit. Although it is not difficult of digeſtion, yet ſome leſs flatulent root, ſuch as parſley, celery, or even potatoes, ought to be uſed together with the beet; which addition will render it not only more palatable, but alſo more ſuitable to the ſtomach and bowels.

Carrots are extremely flatulent, and therefore an improper food for the weak, and thoſe inclined to acidity; by ſuch individuals they can ſcarcely be digeſted, unleſs taken with the addition of ſpice, and a proper quantity of ſalt; by which means

* Whatever has been formerly ſaid againſt the uſe of potatoes, it is now well underſtood that they are wholeſome, nouriſhing, and light to the ſtomach, even in the weakeſt conſtitutions.—M. *Parmentier*, of Paris, lived for ſeveral weeks on potatoes only, without experiencing any ill effects on his health.

their

their fermentation and corruption in the ſtomach will be in a great meaſure prevented. In other reſpects, they contain a good and copious alimentary fluid, at the ſame time powerfully affect the kidneys, and are likewiſe anthelmintic, or deſtructive of worms.

Parſnips, beſides their ſweet mucilage, contain ſomewhat of the aromatic principle, being more nouriſhing and leſs flatulent than carrots. To deprive them entirely of the latter quality, they ought to be boiled in two different waters; but by this precaution they partly loſe their ſweet taſte, and become leſs nouriſhing.

Turnips are nutritive, but flatulent, and not eaſy of digeſtion; they become ſtill more indigeſtible with age.—The leaſt flatulent and moſt nouriſhing of theſe roots are the long kind, or Swediſh Turnip, lately introduced into this country.

Parſley, as well as *Smallage*, are of a ſweet, ſtimulating, and aromatic nature. The former, eſpecially, was by the older phyſicians ſuppoſed to purify the blood; an effect which modern medical obſervers would not only doubt, but even ridicule. So much, however, is certain, that parſley is a mild aperient and diuretic. Yet, for theſe ſalutary purpoſes, it ought not to be eaten in a raw but boiled ſtate.

Celery is one of the moſt fragrant roots we poſſeſs in our climate, though its ſhoots and leaves are more commonly uſed for ſalads, than the root

itſelf. There are two ſpecies of celery known among gardeners, both of which are eſtimable: one produces thick knobby roots, not unlike the ſize and figure of a ſhort pine-apple; the other has a variety of ſmall white, tender, and odorous roots. The latter ſpecies is more common in this country, while the former is much eſteemed in France and Germany, where it is eaten in thin ſlices, previouſly ſoaked in vinegar; a preparation which, in ſummer, affords a cooling and wholeſome diſh. In a raw ſtate, celery is digeſted with ſome difficulty, which may be removed by boiling it in water, or ſoaking it, as before obſerved, for a ſhort time in vinegar.—The Germans prepare an artificial coffee from this root, by cutting it into ſmall ſquare pieces, which are dried and roaſted in the uſual manner. Dr. UNZER occaſionally recommends this native coffee to his patients, particularly to nurſes and lying-in-women, as a wholeſome ſubſtitute for either tea, or the real coffee of the ſhops.

The *Skirret-root*, and the *Scorzenera* of Spain, poſſeſs more ſpicy and ſtimulating than nutritive qualities. Both theſe roots, as well as the three preceding, are diuretic, and conſequently in a ſlight degree ſtimulating. The ſkirret, in particular, has an agreeably ſweet and ſpicy flavour, and is ſo tender, that it can ſcarcely bear to be boiled. For this reaſon, it is moſt properly eaten when raw, like fruit, or may be uſed as an excellent ingredient

dient in ſoups and broths.—The Scorzenera, on the contrary, ought to be deprived of its black ſkin, and only eaten boiled: by ſoaking the raw root for half an hour in cold water, it loſes its bitter taſte, and is likewiſe rendered leſs flatulent.

The *Salſafy*, or Goat's-beard, is a root containing ſtill more of the ſaccharine principle, than the ſcorzenera: being a good ſubſtitute for ſparrow-graſs, and more eaſily reared in this climate, it certainly deſerves to be more generally cultivated in our gardens.

Onions, *Garlic*, *Shallot*, and *Chives*, are ſtimulants: they aſſiſt digeſtion, relieve the bowels, expel flatulency, diſſolve ſlime or mucus, and are therefore beneficial in diſeaſes which proceed from too much viſcidity; beſides, they increaſe the appetite, and ought to be uſed principally as ſpices, or medicines. They are powerful expectorants, but muſt be avoided by very hot, irritable, and choleric temperaments. Although theſe roots are eaten in quantities by whole nations, yet from their penetrating and volatile ſmell, which they communicate to the human breath, it is certain they agree beſt with individuals of a cold and phlegmatic habit, and thoſe whoſe ſtomachs require ſo powerful a ſtimulus.

All kinds of *Radiſhes* may be conſidered as medicinal roots; they are peculiarly calculated to diſſolve ſlimy humours, to generate, and alſo to expel flatulency; moving the air incloſed in the inteſtines,

teſtines, and expelling it, by the copious air contained in themſelves. They are ſalubrious to ſtrong and active ſtomachs; but in thoſe which are deficient in elaſticity, radiſhes increaſe flatulency to the higheſt and moſt troubleſome degree. The ſmall ſalad-radiſhes are more readily digeſted than the large root; they propel all the alimentary fluids towards the ſtomach, increaſe the appetite, and are therefore proper to be eaten before a meal. Old radiſhes are altogether indigeſtible, and the whole genus, like onions and garlic, occaſion a very offenſive breath.

The *Arrow-root powder*, lately imported into this country from the Eaſt Indies, appears to afford a larger proportion of nutritive mucilage than any vegetable hitherto diſcovered: but it is to be regretted that the exorbitant retail-price (eight ſhillings the pound weight) will preclude many invalids and convaleſcents from uſing this excellent root in broths and jellies.

The *fifth* and laſt order of Vegetable ſubſtances comprehends the *Fruit*, or productions, of the different trees and ſhrubs.

Fruit, in general, poſſeſſes ſtrongly reſolvent powers, and it is the more beneficial, as it comes to maturity at a time when the body is relaxed by the heat of ſummer, and when the blood has a ſtrong

ſtrong tendency to inflammation. It is beſides of great ſervice in attenuating the thick bilious impurities collected during the ſummer, and of evacuating them by its laxative virtues. The acid contained in moſt kinds is as uſeful to quench thirſt, as to reſiſt putrefaction. In weak ſtomachs, however, or ſuch as are filled with impurities and ſlime, it is apt to ferment, and occaſion ſome inconvenience; but this may be avoided by a temperate uſe, and eſpecially by eating it boiled.

The more ſap or juice we meet with in fruit, it will prove the more flatulent; and as the juicy, cooling, and watery ſpecies of fruit require ſtrong digeſtive organs, to prevent them from producing fermentation, flatulency, and diarrhœa, a glaſs of old wine is very proper to promote their digeſtion. A gentle diarrhœa, brought on by eating ripe fruit, in ſummer, has frequently a ſalutary effect. Acrid and aſtringent fruit, being rather a medicine than food, is leſs hurtful to the healthy, and to children, than is commonly imagined. Inſtead of being noxious, as ſome imagine, in inflammatory diſorders, it is of the greateſt ſervice. Perſons of a thick and black blood cannot eat any thing more conducive to health than fruit, as it poſſeſſes the property of attenuating and putting ſuch blood in motion; but thoſe of a watery and phlegmatic conſtitution ought carefully to avoid it.

Fruit preſerved with ſugar is antiſeptic and nouriſhing, but at the ſame time flatulent; and if preſerved with ſugar and ſpices, it is heating and dry-

ing. It is moſt wholeſome when eaten on an empty ſtomach, which can exert all its power to expel the air diſengaged from it, and to remove it, before it begins to ferment. Boiling, as well as drying, corrects the flatulent tendency of freſh fruit, ſo that, thus prepared, it will agree with every body. By either of theſe methods it is deprived of its ſuperfluous humidity, as well as of its fixed air; whence it becomes more nouriſhing, but leſs cooling, than in the freſh ſtate.

Sago is the medullary part, or marrow, collected from a ſpecies of palm-tree growing in the Mulucca and other iſlands of the Eaſt-Indies. This ſubſtance, although not ſtrictly the fruit of a tree, well deſerves the firſt place here; for it is uſed as bread by the natives of India, who macerate it in water, and form it into cakes. The grains of ſago, ſold in the ſhops, are obtained by a more artificial proceſs: they furniſh a nouriſhing and agreeable jelly with water, milk, or broth; but require to be previouſly cleaned of the duſt, mould, and ſea-water. To make a complete ſolution of ſago, the firſt decoction ought to be ſtrained, and afterwards boiled a ſecond time, for about half an hour. Prepared in this manner, it is a proper diſh for the conſumptive and convaleſcent, as well as thoſe whoſe digeſtion is weak or impaired.

Cherries produce the effects now ſtated, in a very pre-eminent degree; they are excellent in ſcurvy, in putrid fevers, and in dyſentery; they correct

correct the blood, when inclined to putreſcency, and by their ſaponaceous and melliferous juice, they powerfully reſolve obſtructions in the inteſtines. Thoſe who uſe them with this intention, may eat them at any time of the day, though they operate moſt effectually in the morning, on an empty ſtomach. Even the ſweet ſpecies contain a ſtimulating acid, which, in proportion to their juicy conſiſtence, diſagrees more or leſs with the weak and debilitated; for this ſap or juice eaſily ferments in the ſtomach, and produces flatulency, diarrhœa, and acidity. On account of theſe peculiar effects, perſons whoſe ſtomachs are bilious and vitiated, who are troubled with putrid eructations, and an offenſive breath, ought to eat them freely, to counteract that diſpoſition to putridity.

Cherries are divided into the aqueous-ſweet, the aqueous-acid, and the dry pulpous kinds. The Spaniſh cherries are the moſt difficult to digeſt, but are alſo the moſt nouriſhing. The aqueous-ſweet kind, as our early common cherries, are unwholeſome; becauſe their juice eaſily ferments, and occaſions colic and diarrhœa. The watery-acid ſort are the beſt of any; their juice ſtrengthens the ſtomach, purifies the blood, and is the leaſt flatulent.—Dried cherries are in many diſeaſes an excellent article of diet, on account of their cooling and antiſeptic properties.—The ſwallowing of cherry-ſtones, however, is highly pernicious,

as theſe ſtones have ſometimes been found to accumulate in the inteſtines, to form lumps cemented together by viſcid phlegm, and thus to produce the moſt violent and fatal ſymptoms.

Plums alſo poſſeſs medicinal virtues; they are nouriſhing and attenuating. Prunes, or dried plums, are of peculiar ſervice to coſtive habits, affording an agreeable and nutritive diſh; but, as they are apt to produce flatulency, it would be adviſable to eat them either when the ſtomach is empty, or for ſupper, without mixing them with other aliment. Under this limitation, they are both aperient and cooling, and agree with almoſt every conſtitution; but plums eaten freſh, and not quite ripe, eſpecially in large quantities, are very apt to occaſion looſeneſs, colics, and other maladies of the ſtomach and inteſtines. The larger ſort of plums are in general more dangerous, in this reſpect, than the ſmall ones, as they (particularly the green and yellow kind) are ſeldom allowed to grow perfectly ripe.

Tamarinds are more frequently employed for medicinal purpoſes, than as an article of diet. The pulp of this fruit is one of the moſt grateful acids; which, if taken in the quantity of from half an ounce to an ounce or more, proves gently purgative. By its acidity, it is well calculated to quench thirſt and allay immoderate heat.

Peaches abound with juice, and though not very nouriſhing, they are not productive of diarrhœa.

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This ſalutary fruit was formerly decried as unwholeſome; but it is rather ſerviceable in obſtructions and bilious diſorders. Sugar, wine, and the like, diminiſh the good qualities of peaches; and even when preſerved in brandy, they are not ſo wholeſome as when freſh; ſince they become hard by all artificial preparations. The kernels likewiſe of peaches are a wholeſome bitter, and are cleanſing, on account of their aſtringent properties.

As there are various kinds of peaches, of an inferior quality, it will be uſeful to point out the diſtinguiſhing marks of that fruit, in a mature ſtate. The beſt ſort of peaches have a delicate thin ſkin, which is eaſily ſeparated from the pulpous part. Thoſe which are not naturally ſmooth ought to be covered with only a ſmall quantity of down; for too much down or wool on the ſurface is a ſign of their inferior quality. They are likewiſe not to be depended upon as being wholeſome, if they are of a ſize either too ſmall or preternaturally large. Their pulp ought to be delicate, yet ſolid, ſomewhat fibrous, and full of juice; it ſhould not adhere to the ſtone or kernel, and readily melt in the mouth.

Apricots are more pulpy than peaches, but perhaps leſs nutritive: their juice readily ferments and turns acid in weak ſtomachs; yet, when ripe, and uſed with moderation, they are cooling and antiſeptic,

antiſeptic, particularly for bilious and plethoric individuals.

Of *Pears*, ſome are extremely hard, aſtringent, and difficult of digeſtion; but the more juicy pears have a ſaponaceous, nouriſhing, and readily digeſtible fluid; in their effects they reſemble the ſweet kind of apples, except that they are leſs relaxing to the bowels. Pears are of a more flatulent tendency than any of the fruits before mentioned, and eſpecially the hard winter-pears, which are eaten at a time when the ſtomach requires ſtimulating more than cooling food.

Apples are, in their general effects, ſimilar to other fruit, and, beſides their aromatic virtues, are poſſeſſed of laxative properties. They are ſerviceable in diſeaſes of the breaſt, to remove ſpaſmodic contractions, to neutralize acrimony, and to attenuate viſcid phlegm. With this intention, apples are moſt beneficial when eaten either roaſted or boiled. The common people in Germany are ſo ſenſible of their excellent properties, in inflammatory diſeaſes, that they boil even the wild apples, and drink the water. This proceſs deſerves imitation, eſpecially when apples become ſcarce in Spring.

Apples may be divided into the ſpicy, the acidulated, and the watery ſpecies. The firſt, the various kinds of rennet, for example, have the moſt delicate flavor, and are certainly the beſt; they

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do not contain a ſuperfluity of water, and, from their vinous nature, are not apt to excite flatulency. Other kinds of apples, like the pippins, are too hard, conſequently heavy to the ſtomach, though ſomewhat more nouriſhing than the former. Stewed apples are eaſily digeſted and wholeſome.

The kernels or ſeeds of apples are bitter and aromatic; Nature ſeems to have intended the ſeeds for correcting the watery and fermentable fluids of this and all other fruit, apricots excepted. Hence the kernels of apples and pears, as well as thoſe of plums and cherries, ought to be eaten with the fruit, and not be thrown away as uſeleſs.—The butter in the paſte of apple-pies may be conſidered as an uſeful addition, on account of its tendency to prevent fermentation, though the paſtry itſelf always diſagrees with weak and irritable ſtomachs.

Of *Quinces* we have two ſpecies, namely, the apple and pear-quince: the latter are the moſt wholeſome, particularly thoſe of Portugal. They are an excellent antiſeptic, and in this reſpect the beſt kind of fruit, containing an acid and much mucilage. They are not productive of obſtructions; but their pulp, like that of all other fruit, is digeſted with ſome difficulty. They are generally eaten boiled with ſugar, and are excellent in dyſentery, on account of their copious mucilage.

In *Lemons*, *Oranges*, and other fruit of that kind, we meet with three different ſubſtances.

The external rind contains an eſſential oil, ſtrongly aſtringent and heating; the ſecond or white rind is without taſte; the third part of them is a ſalubrious, cooling, and acid pulp, highly efficacious in counteracting the putrid tendency and diſſolution of the blood. The juice of lemons and limes is one of the ſtrongeſt vegetable acids*; and that of oranges and ſhaddocks, though milder, is not leſs ſalutary.

Theſe acids are of a very ſaponaceous conſiſtence; they attenuate the fluids, remove obſtructions, encourage digeſtion, ſtimulate the ap-

* If the objections ſtarted againſt the uſe of theſe acids, by a late phyſician in Germany, Dr. Unzer, be well founded, we ought to guard againſt their uſe. He maintains that, although lemons and limes may be wholeſome and refreſhing fruits in their native country, yet as they are packed up and ſent to us in an unripe ſtate, they poſſeſs an acrid and unnatural acid, from not having undergone the vinous and acetous fermentations, and which conſequently cannot be wholeſome. The juice, eſpecially, which is obtained from the middle of thoſe fruits, having acquired an highly aſtringent though not unpleaſant taſte, from the ſtyptic quality of the bitter kernels, is extremely unwholeſome. It is, according to the obſervations of Dr. Unzer, very apt to impair digeſtion, and to occaſion either diarrhœa or conſtipation of the bowels.—Such effects, however, will be produced only when theſe acids are *immoderately* uſed; in which caſe the moſt wholeſome ſubſtances will be attended with bad conſequences, and ever form exceptions from the general rule. Yet I muſt agree with Dr. U. that the peel of lemons and oranges contains an inflammable and heating oil which, if rubbed on ſugar, for making punch, lemonade, &c. is apt to produce dangerous effects.

petite,

petite, quench thirſt, cool the blood, counteract putrefaction, are a principal remedy in pectoral, bilious, and inflammatory diſeaſes, as likewiſe in ſcurvy, in all affections of the kidneys, and an antidote againſt the narcotic vegetable poiſons. Hence the largeſt doſe of opium may be checked in its narcotic effects, if a proper quantity of the acid of lemons be taken with, or immediately after it. Four grains of pure opium, for inſtance, or one hundred drops of laudanum, is a very powerful and ſometimes fatal doſe; yet if one ounce of the pure acid of lemons, or two ounces of orange juice, be added to every grain of opium, or to twenty-five drops of laudanum, it will produce a very different effect. Inſtead of ſtupifying the perſon who takes it, and of being attended with painful coſtiveneſs, it will not only prove laxative, but induce firſt a cheerfulneſs, not attainable by the uſe either of opium or ſtrong liquors, and afterwards bring on a gentle and refreſhing ſleep.

Of theſe effects I can ſpeak from my own experience, as well as that of others. Opium, uſed with this addition, is one of the moſt ſalutary and beneficial ſubſtances with which we are acquainted. I am farther inclined to believe, that the Turks, who eat very little animal food, could not bear the large quantities of opium they ſwallow, were it not for the copious uſe of vegetable acids. And that theſe form a principal part of a Turkiſh

ſummer diet, every traveller knows, who has viſited the eaſtern climates.

For theſe reaſons, I cannot ſufficiently recommend the uſe of acids to perſons, who are either accuſtomed, or obliged, to take opiates in large doſes. In choletic, bilious, and plethoric habits, in thoſe liable to obſtructions, whoſe alimentary canal is unclean, and laſtly, in thoſe who feel a determination of the blood to the head, opium is an uncertain, and even dangerous medicine, without the addition of vegetable acids. The want of the acid of lemons may be effectually ſupplied by an indigenous production:—barberries afford an acid fully as ſtrong, and nearly as agreeable, as that of lemons.

The juice of the various ſpecies of *Raiſins* is not unlike that of *ripe* lemons in its properties, but leſs efficacious. There are various kinds of that excellent fruit. Among the larger ſort, thoſe of a blueiſh colour, imported from Marſeilles, are the beſt; while the Spaniſh raiſins, of a light brown colour, are inferior to thoſe of any other ſpecies. Both kinds, as well as *Currants*, contain much nutriment, but cannot be recommended for frequent uſe, as they all tend to produce flatulency, particularly in individuals of relaxed habits and a ſedentary life. On this account, they ought to be eaten with other food, in which caſe they are emollient, gently laxative, and ſometimes anodyne.

Gooſberries,

Gooſberries, having leſs of the acid than either raiſins or currants, are perhaps more wholeſome, eſpecially if their ſkin and other impurities are not ſwallowed together with the juice. When uſed in a green ſtate, for ſauces and pies, they are cooling and refreſhing; and, when ripe, poſſeſs ſimilar properties with cherries.

Figs abound with ſaccharine matter, and are uncommonly nutritive, though at the ſame time of a flatulent nature, unleſs eaten with bread or other mealy ſubſtances.—Of ſimilar effects are mulberries and raſpberries: the former have a more mucilaginous and nouriſhing juice, while that of the latter is more of a vinous nature, and one of the beſt cordials for allaying thirſt and affording refreſhment.

Grapes and *Strawberries* are both excellent fruits. They are uncommonly reſolvent, laxative without debilitating, and promote all the natural evacuations; but at the ſame time, grapes are in a high degree flatulent.

The quality of grapes depends much on climate and ſoil. Thoſe of a ſweet taſte, and aromatic flavour, only ought to be uſed. They agree beſt when eaten on an empty ſtomach, with a ſmall quantity of bread. Beſides their ſlightly nouriſhing quality, it is affirmed by ſome writers, that they cool the blood and animate the nerves.

Strawberries, if eaten plentifully, have been found a ſafe preventive againſt the ſtone in the

kidneys; as is atteſted by the experience of the celebrated LINNÆUS. Yet the ſmall ſtones contained in ſtrawberries, as well as in grapes, are ſaid to accumulate in the inteſtines of ſome individuals, and to give riſe to the moſt obſtinate conſtipations, nay even to the iliac paſſion. The beſt method of eating ſtrawberries is with pure water, and ſweetened with a little ſugar; they are more heating with wine, but leſs wholeſome; with milk or cream they are an agreeable but improper compoſition. As a medicine, the wild ſtrawberry is far preferable to any other.

Cucumbers are a wholeſome, gently opening, and cooling fruit, which may be of conſiderable ſervice to the conſumptive, as it has the property of ſweetening acrid humours. They ſhow a tendency to ferment, and produce diarrhœa; but this may be prevented by the addition of vinegar and pepper, which alſo counteracts their natural coldneſs. Prepared with oil, vinegar, ſalt, and pepper, they are inſupportable to ſome weak ſtomachs, and occaſion frequent eructations and flatulency. But properly pickled, they are an excellent antiſeptic, though unfit to be given to children and wet-nurſes.

Much of the ſame nature with cucumbers are *Melons*; but they are more aromatic, and, in this reſpect, more wholeſome. *Water-melons* require more ſpice and wine than *Muſk-melons*; as they partake more of the nature of Cucumbers.

Gourds, a fruit of the melon-kind, but leſs ſweet, and of a much larger ſize, if boiled in milk, after the firſt water has been poured off, and with the addition of ſalt and pepper, affords ſufficiently wholeſome and nutritive food.

Olives, in their natural ſtate, are bitter, acrid, and exceedingly diſagreeable; though their taſte is much improved when pickled, as we receive them from abroad, particularly in the ſmaller kind, or Lucca olives.—On account of the abundance of oil which they contain, they are unfit for delicate ſtomachs, and are pernicious, eſpecially when eaten for deſert, after a heavy dinner.

Almonds, *Walnuts*, *Hazlenuts*, and *Nuts* in general, are extremely difficult of digeſtion, on account of the oil they contain, which readily turns acrid and rancid on the ſtomach, and occaſions the heart-burn. Bilious individuals ſhould by no means eat them; and there is nothing ſo abſurd as to adminiſter *almond-milk* as a common diet-drink to febrile patients. This milk conſiſts altogether of oily and almoſt inſoluble parts, which heat and vitiate the ſtomach, ſtimulate the bile, and are eaſily decompoſed from the water with which they are mixed. It quickly ſpoils; frequently, indeed, before it is introduced into the ſtomach: it is not in the leaſt degree cooling, and its nouriſhing quality is very improperly employed in fevers, and all thoſe diſeaſes which are attended with debility of the alimentary canal.

Nuts and almonds ought to be eaten only while freſh, and when the ſkin, which is extremely aſtringent and hurtful, can be removed. They ſhould be well chewed, and eaten with ſalt; for every piece ſwallowed entire is indigeſtible, and the ſalt renders them miſcible with our fluids as a ſaponaceous maſs. If eaten in large quantities, they remain in the ſtomach, cannot be expelled by any medicines, and produce alarming and ſometimes fatal diſorders. In general, they occaſion difficult breathing, vomiting, and complaints in the bowels, which have been obſerved to be very common in thoſe autumns that were productive of great quantities of nuts.

Laſt among the vegetable productions, we may claſs the various ſpecies of *Muſhrooms*. They are all of a tough, leathery conſiſtence; and being almoſt indigeſtible, they afford little nutriment, notwithſtanding they, in a great meaſure, reſemble animal food.

Several kinds of muſhrooms are ſaid to contain a narcotic and acrimonious poiſon. And as thoſe of a harmleſs kind cannot be eaſily diſtinguiſhed from the bad ones, this might be a ſufficient reaſon to abſtain from the uſe of them altogether. But if they muſt appear at our tables, vegetable acids, or vinegar, are the beſt antidotes, to counteract their pernicious effects. Pickled with vinegar, or ſalted, muſhrooms become ſtill more tough; and roaſted with butter, they are an indi-

geſtible

geſtible maſs, and extremely liable to turn rancid in the ſtomach.

Of Drink in particular.

I. *With reſpect to its Quantity.*

Drinking is perhaps more neceſſary to the ſupport of animal life than *Eating*; for drink is indiſpenſable to the ſolution and digeſtion of food. Thoſe who drink too little, people, for inſtance, of a ſedentary life, and particularly women, are ſubject to complaints of indigeſtion. Sufficient drink prevents the incraſſation of the blood, and the obſtruction of the ſmaller veſſels; it tends to clear the blood of the acrid particles generated in it; and it promotes the neceſſary ſecretions, ſuch as the bile and the gaſtric juice of the ſtomach.

We ought to drink only when we are thirſty, and to deſiſt when thirſt is quenched: but this is ſeldom the caſe, becauſe many of our liquors ſtimulate the palate. Pure water, therefore, is an ineſtimable beverage, as it will not induce us to drink more than is neceſſary. We ſhould drink in a greater proportion than we eat; for the quantity of our fluids by far exceeds that of the ſolids, and conſequently there muſt be ſecreted more fluids than ſolids. The general rule may be given, to take about double the proportion of liquid to the dry

dry food; but this cannot be accurately obſerved, nor is it applicable in all caſes.

The ſeaſon, the weather, cold, heat, the nature of our food, and the greater or leſs degree of our exerciſe, require more or leſs drink at one time than at another. Thirſt, however, is as good, if not a better guide than hunger; and he who is accuſtomed to drink water only, will not eaſily tranſgreſs the meaſure, if he drink as often as nature calls upon him. With a proper choice of food, every one would drink conformably to his wants. Hence it is needleſs to recommend water as a beverage to perſons who will not be perſuaded to change their irregular mode of eating.

The more we eat in quantity, and the drier our victuals are, the more we ought to drink. The phlegmatic have leſs inclination to drink than thoſe of a ſanguine and choleric temperament. The laborious ought to drink more than the ſedentary, and ſtill more in ſummer than in winter, to ſupply the humours loſt by inſenſible perſpiration.

In the morning when we riſe, we generally feel an inclination for drink, which is relieved by tea, coffee, or other warm liquors. Water would unqueſtionably be a more proper beverage at this time; and I venture to ſay, it would be diſagreeable to thoſe only, whoſe ſtomachs are ſpoiled by the habitual uſe of warm liquors and hot rolls. A glaſs of pure freſh water, and a while after it, a piece of bread with ſome fruit, or even butter,

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would afford a very wholeſome breakfaſt, by which the ſtomach and the inteſtines might be cleared, the blood and humours refreſhed, and the whole body ſtrengthened. If the ſtomach be not loaded with mucus, or relaxed by tippling, a baſon of of ſweet cow's milk, with a piece of ſtale bread, is an excellent breakfaſt in Spring and Summer.

To drink immediately before a meal, is improper, becauſe the ſtomach is thereby ſwelled, and rendered leſs fit for the digeſtion of food. Hence, to avoid the neceſſity of drinking, it is adviſable, not to take any violent exerciſe immediately before dinner. To drink much at night, previous to our going to bed, is likewiſe hurtful. But the drinking before a meal is more noxious than at any other time; becauſe the ſtomach is filled with the liquid we ſwallow; the bile and the gaſtric juice there collected are too much diluted; and conſequently the important office of digeſtion is checked.

To drink much during the time of taking food is alſo objectionable; as the ſtomach is thus rendered incapable of receiving the due portion of aliment. Cold beer or water does not well agree with warm victuals; and the teeth are injured by taking hot and cold ſubſtances in immediate ſucceſſion. In the hot weather of Summer, it is ſcarcely poſſible to delay drinking till the dinner be finiſhed; and it is the more neceſſary, or rather leſs hurtful, at this time, as the bile which ſerves

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to diſſolve the victuals, then requires greater dilution. In Winter, unleſs we eat very dry and ſalted proviſions, we feel leſs inclined to drink at table. But if we muſt drink in the intervals of eating, it would be moſt conducive to digeſtion to drink water only, and in ſmall quantities: as pure water is more proper during the time of eating, becauſe it agrees with all diſhes without exception. Yet a glaſs or two of wine, during dinner, particularly for the aged and debilitated, is proper and conducive to digeſtion.

Some adviſe us never to drink without eating ſomething; but he who drinks only when nature requires it, has no occaſion to eat every time he drinks. Perſons, on the contrary, who are once accuſtomed to drink more than is neceſſary, or to make uſe of hot, ſtimulating, and intoxicating liquors, would do well to eat always ſome bread or other ſolid food along with them. Indeed we ought to begin to drink only after our appetite for food is ſatisfied, and then it ſhould be done gradually during digeſtion. This function may be diſturbed by large draughts of liquor, which occaſion fermentation and flatulency.—Glaſs is the moſt proper ſubſtance for drinking-veſſels; for no other but the fluoric acid will affect it.—For the ſake of delicacy, as well as health, every perſon at table ought to be furniſhed with a ſeparate glaſs or other veſſel for his drink.

Much

Much drink loads and oppreſſes the ſtomach, as it diſtends it too much; but it is not nearly ſo hurtful as too much food. Every beverage relaxes the ſtomach; and perſons whoſe bowels are not ſufficiently elaſtic, ſhould be careful in the quantity they drink; for an immoderate proportion of it may weaken digeſtion, dilute the fluids too much, and conduct the food too quickly through the alimentary canal. An undue portion of drink renders the maſs of the blood too thin and watery; from a thin blood ariſes alſo a weak alimentary fluid, conſequently a general debility of the body, and relaxation of the urinary and other paſſages.

On the other hand, too little drink is equally improper; digeſtion is weakened; many parts of victuals remain undiſſolved, and are not conducted to the lacteals, becauſe the proper means of diluting them are wanting; the blood becomes thick and viſcid; and finally, the ſecretions and excretions are not duly performed, becauſe the different canals are too dry and contracted.

II. *With reſpect to its Quality.*

THERE is as great a diverſity among the kinds of beverage, as there is among thoſe of food: water itſelf is of very different qualities, according to the particles with which it is impregnated, and the places from which it is obtained. That of

wells, ſprings, rivers, lakes, ſwamps, and the various mineral waters, all differ in their ſenſible properties. Even cold and warm water produce different effects. The former, when moderately uſed, ſtrengthens the ſtomach, and proves debilitating only when it is drunk in too large quantities. Warm water is always relaxing, and ſtill more ſo when taken in a large quantity; it remains longer in the ſtomach than cold water, and conſequently is more oppreſſive: cold liquor ſtimulates the ſtomach, but warm drink diminiſhes its elaſticity.

If the ſtomach be overfilled with drink, and its elaſticity weakened, a glaſs of ſtrong wine, or other ſpirituous liquor, may remedy this inconvenience.—Water can only ſo far be called nouriſhing, as it ſupplies the aqueous parts we continually loſe. It is the baſis of all other liquids, and the greater proportion of water they contain, the more fit they are to promote digeſtion.

Spring-water originates partly from that of the ſea, which has been changed into vapours by ſubterraneous heat, and partly from the atmoſphere. As it is diſſolved, purified, and filtered in a variety of ways, before it becomes viſible to us, it is lighter and purer than other waters.

Well-water is more or leſs pure, according as it paſſes over beds of earth, which contain ſoluble, or minute particles. Wells opened in a ſandy ſoil are the pureſt, becauſe the water is there moſt completely

completely filtered. The more frequently a well is uſed, the better its water, provided that no impure ſubſtances are introduced into it; for, the longer water ſtands unmoved, it turns the ſooner putrid. Well-water, finally, may be moſt effectually purified by filtering it through a quantity of ſand and ſmall pebbles; and ſtill more conveniently by means of filtering-ſtones *.

River-water is more pure and wholeſome, if it flows over a ſandy and ſtony ſoil, than if it paſs over muddy beds, or through towns, villages, and foreſts, from which it receives many impure ſubſtances: the water is rendered foul by fiſhes, amphibious animals, and plants. Laſtly, the more rapid the courſe of the river, the eaſier it clears itſelf of feculent particles, and the water becomes purer.

Lake-water much reſembles that of rivers in its properties, but being leſs agitated, it is more impure, and better adapted to waſhing than cooking.

The water, which in caſes of neceſſity is obtained from *ſwamps* or *ditches*, is the worſt of all; becauſe a great variety of impurities are collected in it, which in a ſtagnant water and a ſoft ſoil readily putrify. And, as the mere exhalations of ſuch waters produce a peſtilential atmoſphere, it may be eaſily

* The filtering machines lately invented by Mr. Joſeph Collier, of London, promiſe to be very uſeful for domeſtic purpoſes, as they are applicable to all fluids, but more particularly water.

conceived,

conceived, that the uſe of them muſt be attended with putrid and other dangerous diſeaſes.

Rain-water is alſo impure, as it contains many ſaline and oily particles, ſoon putrifies, and principally conſiſts of the joint exhalations of animals, vegetables, and minerals, of an immenſe number and variety of ſmall inſects and their eggs, ſeeds of plants, and the like.—Rain-water is particularly impure in places filled with many noxious vapours, ſuch as marſhy countries, and large manufacturing towns, where the fumes of metallic and other ſubſtances are mixed with the rain. In high and elevated ſituations, at a diſtance from impure exhalations, if no ſtrong winds blow, and after a gentle ſhower, rain-water is then pureſt; becauſe the vapours of the atmoſphere have already ſubſided. In Summer, however, on account of the copious exhalations, rain-water is moſt objectionable.

Snow-water poſſeſſes the ſame properties as rain-water, but it is purer: both are ſoft, that is, without ſo many mineral and earthy particles as ſpring, well, and river waters. Still purer is *hail-water*, as being produced in the higher regions of the atmoſphere, and having a form, in which it cannot eaſily partake of impurities. Laſtly, *Dew*, as it ariſes from the evaporations of various bodies of the vegetable and animal kingdoms, is more or leſs impure, according to the different regions and ſeaſons.

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As the health of man principally depends on the purity and ſalubrity of the water he uſes, we ought, where neceſſary, to deprive it of its pernicious qualities; and this can be done by boiling, filtering, and moſt effectually by diſtillation. The putrid ſubſtances in the water may be corrected by the addition of an acid. Thus, half an ounce of alum in powder will make twelve gallons of corrupted water pure and tranſparent in two hours, without imparting a ſenſible degree of aſtringency. By the addition of a very ſmall quantity of quick-lime, water may be preſerved from corruption in long voyages: or, to prevent water from putrefcence at ſea, add a ſmall quantity of alkali and vitriolic acid to every caſk, which will preſerve it pure and wholeſome for a twelvemonth. Charcoal-powder has alſo been found to be excellently adapted to check the putrid tendency of water, and for this reaſon the ſtaves of the caſks, uſed on ſhipboard, ought to be well burnt in the inſide, to keep the water from corrupting. Vinegar, or other ſtrong acids, are alſo well calculated to correct putrid water; and may be either mixed with it, or drunk immediately after, to prevent its bad effects.

Wine, that ſalutiferous liquor to the infirm and the aged, may be divided into *five* principal claſſes:

1ſt, The *ſweet wines*, for inſtance, thoſe of Hungary, Spain, Italy, Greece; the Malaga, Malmſey, Madeira, and Cape wines. If theſe be genuine; if they have not been adulterated by the addition of

ſugar or honey, &c. if they have been properly fermented, they afford a true medicine to the weak and convaleſcent.

2d, The *weakly acidulated wines*; ſuch as old Rheniſh, Champaigh, thoſe of the Moſel, of the Neckar, Franconia, and Auſtria; of theſe the Rheniſh, Moſel, and Champaigh wines are the beſt.

3d, The *acid* and *tart wines*, among which are moſt of the wines of Franconia, Thuringia, Saxony, Sileſia, and ſome parts of Brandenburg. Theſe wines, in general, are apt to occaſion head-achs, complaints of the ſtomach, and are beſides of an unpleaſant taſte.

4th, The *acidulated ſweet wines*, particularly thoſe of France, as the common white wine and claret, are wholeſome, provided that they be neither too old nor too new; and,

5th, The *ſharp* and *aſtringent wines*, ſuch as Port wine, Burgundy, the dry or hard kinds of Madeira, Sherry, and the like, which, on account of their heating and binding nature, ought to be uſed chiefly for medicinal purpoſes.

There are a great variety of fruit-wines, which are fermented like wines from the grape; for inſtance, the currant and raiſin-wines: but the artificial wines of this country are, in general, liable to many ſtrong objections. Among our home-made wines may be reckoned Cyder and Perry, which are properly wines of Apples and Pears.

Pears. Cyder and Perry are, it is ſaid, generally fermented and kept in leaden veſſels, or at leaſt the Apples and Pears are paſſed through leaden tubes; and the lead being readily diſſolved by the acid, is gradually introduced into the body, which produces painful and dangerous colics, and frequently gives riſe to the moſt deſperate and incurable obſtipations, among thoſe habituated to the free uſe of theſe liquors.

With reſpect to the conſtituent parts of wine, I ſhall only remark, that every kind conſiſts of three principal ingredients, *water*, *alcohol*, or a pure ſpirit, and *ſugar*. If theſe three ſubſtances could be ſo intimately combined as they are in wines, and if afterwards the proper aromatics were added, to impart to them the particular flavour, there is no doubt, but we could perfectly imitate every wine whatever. But the greateſt obſtacle to this ſpeculation is the length of time, which wines require to arrive at a proper ſtate of maturity, and which, in made wines, ought to be ſtill further prolonged.

The more water the wine contains, it is the more ſuitable beverage at table, and, when weak, it is in ſome degree calculated to quench thirſt. The ſtrong wines, on the contrary, excite thirſt, as they are drying, and affect the organs of ſecretion. As every kind of wine contains a greater or leſs quantity of acid, it is an excellent antiſeptic remedy, and hence it is given copiouſly in putrid

ulcers and malignant fevers. Moderately uſed, it increaſes the circulation of the fluids, and dilates the blood-veſſels, promotes both the ſecretions and excretions, and invigorates all the functions of the body. Every motion is performed with greater vivacity, as is obvious from the additional luſtre of the eyes. But the ſtrength and vigour which wine imparts to the body, is of no longer duration, than while it remains in the ſtomach, before it enters into the maſs of the blood, and while the ſtimulus received by the nerves of the ſtomach, is propagated to the brain. This explains the cauſe, that ſtrong liquors are ſo intoxicating, when drunk upon an empty ſtomach.

That wine operates on and through the ſtomach, is clear from experience; for an emetic taken immediately after it, will ſoon make a drunken man ſober. But if its ſpirituous parts be communicated to the blood, ſo as to occaſion fluctuations, the body becomes diſordered, weak, and relaxed. It is only a ſtimulant, and not a permanently ſtrengthening cordial; for moſt wine-drinkers, who indulge in exceſs, die of relaxation and debility. There may, however, be caſes in which an occaſional exceſs of this kind will be ſalutary; for inſtance, to a perſon who has been long ſitting at ſtudy, or whoſe mind is depreſſed, and whoſe fluids are nearly ſtagnating: as paſſions ſometimes conduce to animate the mind, and tempeſts to purify the atmoſphere.

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The *ſtate of intoxication* is in every reſpect ſimilar to that of incipient apoplexy or palſy.—Drunken men ſtagger in various directions, their tongue loſes its power of ſpeech; they ſtammer, and ſee things double and moving circularly. The mind is equally affected, and imbecility is the concomitant effect. All theſe partial palſies ariſe from the preſſure of the blood-veſſels on the brain, which are then ſurcharged with blood. If the intoxication has arrived at its utmoſt height, there is no longer any difference between this and the true apoplexy; all the other organs are paraliſed, except the heart, which continues its action, and breathing is not ſuppreſſed. The imprudent ſufferer is deprived of ſenſation, and if one of the ſmaller blood-veſſels, that preſs on the brain with an unuſual weight, ſhould accidentally burſt, he is in danger of inſtant death. But ſtill more frequently does one of the pulmonary veſſels burſt, and occaſion ſpitting of blood.

In drinking, alſo much depends on the bodily conſtitution and other circumſtances. Thus, people are ſooneſt intoxicated in a cold place, where perſpiration is checked, and when the blood is moving from the external to the internal parts. The ſame is the caſe, on an empty ſtomach, but this may be prevented by eating a little at intervals, eſpecially fat or oily ſubſtances. Individuals of much ſenſibility and irritability, and perſons after having taken violent exerciſe, are more liable

to intoxication, than thoſe of a calm and a phlegmatic temperament.

For theſe reaſons, a perſon much inebriated ought to be carried without delay into a temperate room, and placed in a bed between the blankets, with his head raiſed, in order to promote the circulation of the blood, from the head and the internal organs towards the ſurface of the body and the lower extremities. All cloſe bandages of the ſhirt and garters muſt be looſed, and the feet ſhould be bathed in lukewarm water, not exceeding the ninety-eighth degree of Fahrenheit. Plenty of tea or other diluent drink ought to be given, and a gentle emetic is frequently of great ſervice.

After a good ſleep, which has overcome the intoxication, the whole body feels weak and tremulous; and the ſtomach diſordered. In this ſtate, perſons are generally troubled with much acid in the digeſtive organ, which may be removed by the abſorbent earths, ſuch as magneſia; after which, ſome ſedative and ſtrengthening remedies may be given, ſuch as hot red-wine negus, warm ale with ginger, ſtrong coffee, and the like.

The copious uſe of wine, though not to a degree of inebriation, is exceedingly debilitating to the ſtomach, checking digeſtion, exciting diarrhœa, if white-wine, and obſtructions, if Port-wine be the favourite liquor; it makes the fibres dry and rigid; the cheeks and the whole ſurface of the body turn ſallow, a ſymptom of bad digeſtion; the powers

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of the body and mind are enfeebled, and dropſy or gout, and ſometimes ſudden death, are the conſequences. Plethoric young men, and ſuch as have weak ſtomachs and lungs, ſhould not accuſtom themſelves to the uſe of wine. To give it to infants or children, is a practice highly pernicious, except in very ſmall quantities indeed. In ſhort, wine ſhould be uſed as a medicine only, if intended to produce ſalutary effects. To the phlegmatic, to the aged, and to thoſe who are diſpoſed to flatulency, and after fat meat, it is highly beneficial, if uſed with prudence and moderation.

As wine encourages perſpiration, it dries the body, makes it lean, and may therefore be of ſervice to cold and phlegmatic conſtitutions. It ſtimulates the bile, and excites the appetite to a repetition of exceſs, ſo that perſons once habituated to drinking can but gradually relinquiſh this ſeductive practice. To drink wine copiouſly every day, is as improper and pernicious as to take medicines by way of diet; nothing is ſo much calculated to occaſion habitual indigeſtion. And as wines are frequently adulterated with ſugar of lead, and other poiſonous ingredients, to render them more agreeable to the palate, I propoſe to beſtow ſome attention on this important ſubject, in order to enable the reader to detect ſuch pernicious mixtures, which may expoſe his health, and even life itſelf, to the greateſt danger.

Some of the adulterations of wine are rather harmleſs, others extremely dangerous. The common red-wines are frequently made of new, tart, and half-ſpoiled white wines, by tinging them with red ſumach, or other woods and berries. In order to make wines ſtronger and more pungent, a variety of ſpices are employed, ſuch as galangal, cardamom, mace, and the like; or an unfermented muſt, wort, or the maſh for diſtilling ſpirits, are occaſionally added, and allowed to ferment together with impure wines. To impart to wine the flavour of muſcadel, the leaves of the *Horminum*, a ſpecies of Sage, (*Salvia Horminium*, L.) are often uſed; though it be a plant of a ſtrong ſtupifying ſmell, and very pernicious effects.

All adulterated wines, and what we call Britiſh wines, if drunk in any quantity, are more or leſs detrimental to health. For, even by the moſt innocent mode of preparing them in large quantities, the manufacturers are induced to ſeaſon them with ſpices of a heating and ſtimulating nature. But the moſt deleterious of all adulterations of wine, is that with the various preparations of lead, to give it a ſweet taſte. This infamous practice was carried on, ſome years ago, in Paris, to ſuch an extent, that the Exciſe-office could not account for the prodigious increaſe of Vinegar entered at the city-gates. But it was at length diſcovered, that this vinegar conſiſted only of tart and adulterated wines,

wines, imported under the pretended character of vinegar, in order to avoid the high duty impoſed upon wines, on their entrance into Paris: and ſugar of lead, joined to ſome abſorbent earths, was employed to change theſe vinegars into ſweet wines, which deſtroyed the lives of many thouſand perſons. This ſecret, of the utmoſt importance to health and life, was confeſſed by a rich old wine-merchant, on his death-bed, to relieve in ſome degree his tortured conſcience.

Such adulterated wines operate like ſlow poiſons; they firſt occaſion head-ach, contraction of the throat, pain of the ſtomach, uneaſineſs, cough, difficulty of breathing; afterwards colics, and particularly the dry belly-ach, with continual obſtipations, and at length palſy, convulſions, conſumption, and death.—The braſs cocks alſo, which are by ſome people uſed to draw off wine or cyder, are of the moſt dangerous tendency; as they eaſily yield and mix their verdigriſe with the liquor.

To detect adulterated wines, we muſt attend to the following particulars: every white or ſtraw-coloured wine of a ſweetiſh taſte, afterwards aſtringent, and at the ſame time new; every wine that has an unuſually high colour, not in proportion to its ſtrength and age, or if it has the flavour of brandy, penetrates the tongue, or laſtly, if it has an uncommonly ſtrong flavour, may be juſtly ſuſpected of adulteration.—Red wines, either of a very deep, or a very faint colour; of a woody or tart taſte;

taſte; and thoſe which cover the inner ſurface of the glaſs, as well as the bottom of the bottles, with a red ſediment, are generally tinged with ſome colouring ſubſtances. If ſuch a wine be paſſed through filtering paper, the colouring particles will remain behind on the paper.

By the following method, we may eaſily diſcover, whether wines be adulterated, or coloured, with burnt ſugar, raiſins, whortle-berries, and the like. A ſmall phial muſt be filled with the ſuſpected wine; the opening is ſtopped with the finger, and the phial, being inverted, is plunged into a tumbler of water: the finger being withdrawn from the mouth of the phial, if the wine be adulterated, the ſubſtance with which this is done, will viſibly eſcape from the phial, and mix with the water; in ſo far at leaſt, as the addition is heavier than water, which is generally the caſe.

Theſe adulterations, however, are of little detriment to health, if they contain no *metallic* particles. In order to diſcover theſe, we are poſſeſſed of an excellent chemical teſt, contrived by Prof. HAHNEMANN, in Germany, and known by the name of *Liquor vini probatorius*. It is prepared as follows: One drachm of the dry liver of ſulphur, and two drachms of cream of tartar, are ſhaken in two ounces of diſtilled water, till it be completely ſaturated with hepatic air: the liquor is then filtered through blotting paper, and kept in a cloſe-ſtopped phial.

From ſixteen to twenty drops of this liquid are dropped into a ſmall glaſs, filled with wine that is ſuſpected to have been adulterated. If the wine turn only thick with white clouds, and depoſit no other but a white ſediment, we may be certain that it contains no metallic ingredients whatever; but if it turn black, or even dark, if its colour approach that of a dark red, if it have firſt a ſweet, and then an aſtringent taſte, it is certainly impregnated with ſugar of lead, or ſome other preparation of that metal equally deſtructive. If, however, the dark colour be of a bluiſh caſt, not unlike that of pale ink, we may ſuſpect the wine to contain iron in its compoſition. Laſtly, if the wine be impregnated with copper or verdigriſe, it will depoſit a ſediment of a blackiſh grey colour. This experiment ought to be made with a freſh-prepared teſt, and in the open air.

It further merits attention, that white wines are very frequently coloured with burnt ſugar and other vegetable bodies; they acquire a darker colour by being kept in oak caſks, or by containing much tartar; and in all theſe caſes they will be made ſomewhat darker by the above deſcribed teſt; but the ſediment will not be of an uniform colour, and will conſiſt only of ſome brown ſtreaks.—It is well known, that all white wines muſt be impregnated with a ſmall quantity of ſulphur, in order to preſerve them: if this be done in moderation, it is not detrimental to health; but

if

if too great a proportion of ſulphur be uſed, ſuch wine occaſions great heat and thirſt, it ſoon intoxicates, produces eruptions of the ſkin and face, head-ach, trembling of the limbs, and palpitation of the heart, hemorrhoidal complaints, gout, and a variety of nervous ſymptoms. Nothing is ſo eaſily diſcovered as ſulphur; for by putting a piece of ſilver, or even the ſhell of an egg, into an over-ſulphurated wine, it will inſtantly turn black.

Wines are ſometimes adulterated by mixing quick-lime with them, in order to produce a beautiful ruby-colour. If ſuch a wine be poured into a tumbler, and allowed to ſtand for a day or two, a thin cruſt or pellicle will be formed on the top, by which the lime held in ſolution will be detected. It is affirmed that ſuch wines, if uſed for any length of time, bring on gouty and gravelly complaints.

The moſt innocent adulteration of wine, and perhaps the moſt frequent, is that with water. If a ſmall quantity of wine be poured on quick-lime, and if the lime be ſlackened by it, the wine then certainly contains water. But if the lime continues whole, the wine is pure and unmixed.

Ardent ſpirits compriſe all thoſe liquors obtained by fermenting vegetable, and particularly farinaceous ſubſtances, to a certain degree, and afterwards ſubjecting them to diſtillation. All diſtilled liquors conſiſt of a great proportion of alcohol or pure ſpirit, a greater or leſs quantity of water, and generally

generally of a very ſmall proportion of an empyreumatic oil, eſpecially if diſtilled once only, or if this proceſs be carried on too quickly. Pure ſpirits are perfectly free from this oil, which, from its burnt and acrid nature, is altogether indigeſtible. Proof ſpirits ought to conſiſt of 55 parts of alcohol, and 45 of diſtilled water in 100: but rectified ſpirits of wine ought to have only 5 parts of water in the hundred: the ſpecific gravity of the former being as 930, and that of the latter as 835, to 1000.

The intoxicating effects of ſpirits are but too well known; if they be diſtilled over peppermint, balm, anniſeed, or carraway, their ſtrength is not much increaſed; but if over cinnamon, cloves, mace, or other hot ſpices, they are rendered ſtill more heating, and pernicious to health.

If drunk in hot weather, or after violent perſpiration, they check this function, by contracting the veſſels of the ſkin, and cloſing the pores. On account of this contracting power, they are ſometimes of ſervice to a perſon whoſe ſtomach is overloaded with beer or water, to aſſiſt their paſſage through the proper emunctories. After violent exerciſe and heat, a dram of ſpirits is more proper than cold water or beer, though a cup of tea or other diluent drink is preferable. After fat or ſtrong food, ſpirits are exceedingly improper: for, inſtead of promoting the ſolution and digeſtion of food in the ſtomach, they rather tend to retard

tard it. We may be convinced of this, by attending to the effects they produce on inanimate ſubſtances: for theſe are preſerved from diſſolution and putrefaction more effectually in ſpirits, than in any other liquid. Thus we may learn, that ſpirits will impede digeſtion, and render ſtrong food taken into the ſtomach ſtill more indigeſtible. Many perſons are accuſtomed to take a dram as a remedy againſt flatulency: if the ſtomach be clean and undepraved, they will certainly be relieved by it; but, in the contrary caſe, their expectations will be diſappointed.

Ardent ſpirits are rendered ſtill more contracting, and prejudicial to the ſtomach, when combined with acids, as in punch; and, for the ſame reaſon, the habit of taking drams after fruit, or any acid vegetable, is abſurd. Notwithſtanding the frequent abuſe of ſpirits, they afford one of the moſt excellent antiſeptics; but, if the human body be already replete with vitiated humours, and troubled with frequent eructations, it is too late to cure it with gin or brandy. Theſe liquors, however, are of conſiderable ſervice in preventing the bad effects of a moiſt and cold atmoſphere, of peſtilential vapours, of very unclean occupations, of a damp military camp, and occaſionally too, of a temporary abſtinence from food.

To perſons of relaxed fibres, diſtilled liquors may, under certain limitations, be uſeful, as they increaſe the elaſticity and compactneſs of the veſſels.

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But to thoſe, whoſe fibres are already rigid, ſpirits are obviouſly pernicious, and have a tendency to bring on a premature old age. They ſtop the growth of, and are otherwiſe very improper for, young perſons.

That ſpirituous liquors incraſſate and coagulate the fluids, we may eaſily diſcover in thoſe who are addicted to the uſe of them: they have a thick blood, are troubled with conſtant obſtructions of the inteſtines, and their unavoidable conſequences; ſuch as a gradual depravation of the nervous ſyſtem, loſs of memory, debility of mind, hypochondriaſis, jaundice, dropſy, and at length conſumption of the lungs. The throat and ſtomach of habitual tipplers are rendered callous, and at length almoſt cloſed, the glands are indurated, and conſequently digeſtion is in the higheſt degree impaired.

Beer, conſidered according to its ingredients, conſiſts of water, malt, and hops*; and in pro-

* Beſides theſe ingredients, Brewers are apt to add a number of other ſubſtances, ſome of which are extremely noxious, and all prohibited by law. Theſe are *Cocculus Indus*, Coriander Seeds, Alum, Liquorice and Liquorice Root, burnt Sugar, Treacle, Capſicum, Ginger, Copperas, &c. &c.—An uſeful pamphlet has lately been publiſhed, called "*Every Man his own Brewer*," detailing this manufacture, and, at the ſame time, ſhewing practically, how any private family, or even lodgers, may make Porter and Ale in the ſmalleſt quantities, at leſs than half the expence at which theſe articles are purchaſed.

portion

portion to the quantity, quality, and manner of compounding them, it has received different names, and is poſſeſſed of various degrees of ſalubrity. The more water there is uſed in brewing beer, it is the better calculated to quench thirſt; but leſs ſo, if it contain a great proportion of the mucilaginous and ſaccharine principle of the grain. Strong beer, therefore, is very nouriſhing, and may be employed with advantage as a medicine, in emaciated habits.

The greater or leſs addition of hops to the malt, furniſhes us with bitter or ſweet beer. The former kind is preferable as a medicine; the latter is more uſed as a common beverage; but it is apt to excite flatulency and diarrhœa. Hops, like other bitter ſubſtances, preſerve beer in its vinous ſtate, ſtrengthen the ſtomach, and diſſolve viſcid phlegm. Beer made of a great proportion of hops, and a ſmall quantity of malt, is a good beverage, and well calculated to allay thirſt.

There are great varieties in beer, accordingly as it is fermented; ſome kinds, ſuch as thoſe made of oats, in ſome parts of Germany, which are ſcarcely allowed to ferment at all, are very cooling in Summer, but ſoon ſpoil; others are only half-fermented, ſuch as the Dantzig ſpruce or black beer; others again to a ſufficient degree, like our porter and ale; and laſtly ſome, which are more than ſufficiently fermented, ſuch as Burton ale, and moſt of the ſtrong home-brewed ales. All theſe

are different in their effects, according to the various degrees of fermentation.

Every kind of beer is inclined to ferment, on account of its conſtituent parts. If it be not properly fermented, this takes place in the ſtomach itſelf; the fixed air, being diſengaged within the body, diſtends the ſtomach and bowels, and occaſions flatulency and looſeneſs. However, when drunk in ſmall quantities, it is not attended with any great inconvenience, particularly in Summer, or in hot climates. It is uſed with great advantage at ſea, againſt that great enemy of the mariner, the ſcurvy; thoſe perſons who have corrupted gums, that are painful and bleed on the leaſt touch, ought to drink half a pint of wort, or unfermented beer, every morning and evening, keeping this liquor for a good while in their mouth; and they may promiſe themſelves great benefit from this ſimple remedy.

Many conſider beer or porter as excellent, when it foams much and makes a head, as it is called, on the top of the veſſel; which is drunk by ſome tipplers with avidity, before it diſappears. But this froth is not a proof of its good quality; but rather of its imperfect fermentation, which is continued and completed in the ſtomach. It is likewiſe often artificially increaſed, by the addition of improper ingredients. The volatile vapour, or gas, diſengaged from ſuch beer in the ſtomach and bowels, produces a quantity of ſtimulating and contracting

air, by which the alimentary canal is almoſt at the ſame time expanded and contracted, ſo that the moſt dangerous ſpaſms and colics may thence ariſe. Such beer likewiſe emits a quantity of ſulphureous vapours; and for this reaſon it is dangerous to go into cellars, where it is kept in a ſtate of fermentation. A candle will often be extinguiſhed by the vapour of cellars, which is ſometimes ſo noxious as to ſuffocate perſons on their entrance.

If bottles filled with beer, ale, or porter, are not ſoon enough corked, it turns flat or ſour, acquires an unpleaſant taſte, produces flatulency, colics, and ſpaſms. If bottled and corked in proper time, the gas which it ought to contain is not diſſipated; its agreeably pungent taſte is preſerved, and it is then a very excellent and nouriſhing liquor, which allays thirſt, and does not affect digeſtion, like wine.—A perſon who has a good appetite, and takes nouriſhing food, requires no beer for its digeſtion; and, by drinking it, he is expoſed to plethora, or a full habit, and all its concomitant complaints. Thoſe, on the contrary, who take a great proportion of vegetable food, and have a weak ſtomach, will find a ſtrong and bitter beer ſalutary.

As every new ſort of beer is not equally grateful to the ſtomach, we would do well to deſiſt from uſing that kind, to which we cannot habituate ourſelves in the courſe of two or three weeks. On account

account of the great variety of this liquor we meet with in travelling, it is much better to drink no beer at all on journeys, and inſtead of it to uſe lemonade, in hot weather, and wine or ſpirits mixed with water, when we travel in a damp and cold ſeaſon.

Beer, in general, is nouriſhing, and has a tendency to fatten ſuch individuals, as are of dry and rigid fibres, and whoſe bile is good. Hence the inhabitants of countries, in which beer is the principal beverage, are commonly more phlegmatic and indolent than thoſe of wine-countries. Many ſorts of beer, however, in which a greater than uſual proportion of grain is uſed, contain much ſpirit, and are of a heating and inebriating nature. Such is, for inſtance, our Burton and ſeveral other ales, and all the ſtrong kinds of foreign beer.

Light and well-fermented beer is a wholeſome and, at the ſame time, diluent ſpecies of nouriſhment. With perſons already plethoric, or diſpoſed to become corpulent, the lighteſt beer generally agrees beſt. Thick and nouriſhing beer is of ſervice to wet-nurſes and the debilitated. Sweet beers are only nouriſhing, but all the bitter kinds are ſtrengthening alſo. The latter are beneficial in a weak ſtate of digeſtion, and to people troubled with acid in the ſtomach; yet ſweet beer is more wholeſome for daily uſe, and at the ſame time leſs expoſed to dangerous adulterations. In ſhort,

beer is no proper beverage for people of a thick, black-bilious blood, and with a diſpoſition to melancholy: it is the moſt uſeful ſpecies of drink to the weak, the lean, and the laborious; provided they are not very ſubject to flatulency, nor troubled with diſeaſes of the breaſt. In both of theſe caſes, I have found it uniformly to diſagree, and to be much inferior in ſalubrity to water.

A moderate uſe of fermented or diſtilled ſpirituous liquors is far leſs prejudicial to the conſtitution, than the habitual and exceſſive drinking of warm liquors. *Tea*, the common favourite among all ranks, if taken regularly twice a-day, and in large quantities, is attended with bad conſequences. It thoroughly relaxes the coats of the ſtomach, weakens the bowels, prediſpoſes them to flatulency upon the leaſt occaſion, and deſtroys all the energy of the digeſtive organ. Theſe effects, however, are not ſo frequent, nor indeed to that extent, if the tea be drunk ſtrong, ſufficiently diluted with milk, and ſweetened with ſugar: it is chiefly the warm water, which renders the tea of the common people ſo deſtructive to the conſtitution, as they generally make up for the indifferent quality of the tea, by the quantity of water.

The tea-leaf, which has employed the pens of ſo many eminent writers, ſtill deſerves ſome attention; as the nature and properties of it are but imperfectly underſtood. It certainly is an aromatic, ſlightly aſtringent, and ſomewhat narcotic plant.

plant. Whether it poſſeſs any diuretic, diaphoretic, and other virtues, for which it has been celebrated, is rather doubtful; as theſe may be in part owing to the great quantities of warm water, with which the infuſions of it are made. Good tea, particularly the black ſort, in moderate quantity, and made ſtrong, is antiſpaſmodic and refreſhing. It is, therefore, calculated to relieve the cramp of the ſtomach, and pains of the abdomen, if they proceed from flatulency. But, according to circumſtances, it may even increaſe ſpaſmodic contractions; for inſtance, if it ariſe from a vitiated bile, from worms, or from hyſteric and gouty complaints; in all which caſes tea will moſt certainly not relieve, but rather prolong the ſpaſmodic contraction of the veſſels. The relaxation which tea occaſions in the firſt paſſages, renders it peculiarly hurtful to females of lax fibres, a thin blood, and irritable habits. To enumerate the great diverſity of nervous ſymptoms, attending its abuſe in ſuch conſtitutions, would lead me too far from the preſcribed limits; but ſo much is certain, that the vapours ariſing from liquors drunk very hot like tea, weaken the lungs, and diſpoſe their votaries to frequent colds and catarrhs, which readily make a tranſition into conſumptions.

Individuals of a rigid and ſolid fibre, of a dry and firm body, may be allowed to drink tea in moderation, as it will not eaſily hurt them. By adding a table-ſpoonful of old Rheniſh wine, or

ardent ſpirits, to every cup of tea, it may be ſo far improved, as to make it leſs flatulent; but the frequent repetition of it, even in this form, muſt be detrimental to the body. A moderate uſe of tea may ſometimes be of ſervice to perſons in a perfect ſtate of health; yet, for daily uſe, it cannot be recommended. It doubtleſs occaſions a gentle ſtimulus, and rouſes the mind for a ſhort time; hence it is perhaps the beſt and ſafeſt refreſhment after violent heat and fatigue of the body. As the means of increaſing perſpiration, tea is an uſeful beverage to travellers in cold weather, when inſenſible perſpiration is liable to be checked.

Hypochondriac and hyſteric people, however, are much deceived in the efficacy of tea, as a diluent drink; for all the evils ariſing from relaxation, a weak ſtomach, and flatulency, under which ſuch perſons uſually labour, are, by the habit of drinking tea, increaſed to the moſt alarming degree. The *cold* ſtomach, which they propoſe to *warm* by it, is a mere phantom of the brain; for this ſenſation of cold is nothing but relaxation, which cannot be removed by *hot* liquors, but is increaſed by every repetition of them.

It would be a great proof of a patriotic ſpirit in this country, if the uſe of this exotic drug were either altogether abandoned, or, at leaſt, ſupplied by ſome indigenous plants of equal flavour, and ſuperior ſalubrity. The Chineſe have good reaſon

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to ſmile at our degenerate taſte, when they are informed, that we actually poſſeſs an immenſe variety of the moſt valuable aromatic plants, much better calculated by nature to invigorate our ſtomachs, and to revive our ſpirits, than tea, which we purchaſe from them at great expence. Theſe ſentiments may be ungrateful to tea-dealers, or Eaſt-India merchants, but every honeſt truth ſhould be candidly told to an unbiaſſed public.

It would undoubtedly be more conducive to our health, if we could altogether diſpenſe with the uſe of warm liquors, at leaſt when in a ſtate of health. But, if this practice muſt be indulged in, we ought to chooſe the herbs growing in our own meadows and gardens, inſtead of making ourſelves tributary to diſtant nations. With this intention, the late Dr. Solander introduced his *Sanative Tea*; not with a view of making it a ſecret or quack-medicine, under which character it is now ſold in this country, but of recommending the uſe of it to thoſe individuals who require diluent liquors, and to the heavy, ſluggiſh, and phlegmatic. Dr. Tiſſot had previouſly recommended the ſtalks of cherries, and the leaves of peach and almond trees, to the poor people of Switzerland, as ſubſtitutes for tea; but we poſſeſs a variety of plants infinitely ſuperior to theſe, of which I have myſelf occaſionally made trial. I ſhall divide theſe into three claſſes; namely,

1ſt, The ſtrong, ſpicy, and balſamic plants, ſuch as balm, peppermint, ſage, and the like.

2d, The ſtrongly aromatic flowers, among which thoſe of the *Roſa pimpinellæ folia* (or the roſe whoſe leaves reſemble thoſe of the Burnet-ſaxifrage) and the *wood-roof*, or the *Aſperula odorata*, L., deſerve the firſt place, and far excel in flavour all the teas imported from China; and laſtly,

3d, The mild aromatic leaves and bloſſoms of trees and ſhrubs, for inſtance, the bloſſoms of the lime-tree and the black thorn, the leaves of the peach and almond-trees, and particularly the firſt tender leaves of the *whortle-berries*, or the *Vaccinium Myrtillus*, L., which cannot be diſtinguiſhed from real tea, when properly gathered, and dried in the ſhade.

After having pointed out the beſt ſubſtitutes for Indian Tea, I cannot ſuppreſs my earneſt wiſh, that even theſe indigenous vegetables may not be abuſed by decocting them in too much water, which, when ſwallowed hot, muſt be detrimental to the ſtomach, the lungs, the nerves, and the whole human frame. I cannot better conclude this important article, than by quoting the prophetic words of an experienced phyſician.—"Tea," ſays he, "will induce a total change of conſtitution in the people of this country. Indeed it has gone a great way towards effecting that evil already. A debility, and conſequent irritability of fibre, are become

become ſo common, that not only women, but even men are affected with them. That claſs of diſeaſes, which, for want of a better name, we call nervous, has made almoſt a complete conqueſt of the one ſex, and is making haſty ſtrides towards vanquiſhing the other." And Dr. Buchan emphatically concludes: "Did women know the train of diſeaſes induced by debility, and how diſagreeable theſe diſeaſes render them to the other ſex, they would ſhun tea as the moſt deadly poiſon. No man can love a woman eaten up with vapours, or waſhed down with diſeaſes ariſing from relaxation."

Coffee is a decoction of the well-known bean or berry of that name, roaſted and ground into a powder. The bitter and aſtringent powers of the beans, in ſome meaſure, correct the bad properties of warm water; but if they be too much roaſted, their empyreumatic oil is expelled, and they acquire an inſipid taſte. If, on the other hand, they be not ſufficiently roaſted, this burnt oil is not evolved to the ſurface of the bean, and the coffee acquires a bitter and unpleaſant flavour. This beverage is generally conſidered as ſtrengthening to the ſtomach. It promotes digeſtion, diſpels flatulency, removes vertigo and torpor, exhilarates the mind, increaſes the circulation of the blood and inſenſible perſpiration, attenuates viſcid humours, is diuretic, and ſometimes gently aperient. Theſe properties of Coffee being, in a great meaſure, confirmed

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by experience, juſtly make it a valuable medicine, which is eminently qualified to cure the moſt troubleſome head-achs, provided they originate from the ſtomach, or from a bad ſtate of concoction. Coffee drunk after dinner promotes digeſtion; and agues, diarrhœas, and giddineſs, have been frequently removed by it. Its ſubtle oil ſtimulates the ſolids, rarefies the blood, and conſequently is of particular ſervice to females of a ſedentary life, and to thoſe who ſuffer from phlegmatic and catarrhal diſeaſes. If drank too ſtrong, it affects the nerves, and by its penetrating property often occaſions ſleepleſſneſs, and tremor of the hands; but, in ſome phlegmatic and indolent individuals, it is apt to excite ſleep.

If coffee be not uſed merely as a diluent for relaxing the fibres, it ought to be made ſtrong. The beſt proportion is, one ounce of well-roaſted and ground coffee to one pound or one pint of water, which ſhould be juſt allowed to boil up: for the longer it is boiled, it loſes the more of its volatile and aromatic particles, and conſequently becomes weak and inſipid.—As coffee is poſſeſſed of excellent antiſpaſmodic virtues, it is a favourite beverage with the hypochondriac and the hyſteric; and according to early obſervation, it is alſo the beſt and moſt effectual remedy in ſpaſmodic aſthma.

The ſteam of boiled coffee has frequently been beneficial to weak eyes. If drunk in the morning, and

and immediately after dinner, of a proper ſtrength, and not above one, or two ſmall cups, it is a wholeſome ſubſtitute for tea or ſpirits, particularly to perſons in a good ſtate of health, and to ſuch as are not habitual wine-drinkers, or of a very irritable temperament.—Laſtly, the coffee of the Levant far excels that imported from the Weſt Indies, which is frequently ſteeped in ſea-water, in order to make it weigh heavier. This fraudulent practice may be eaſily detected, by ſoaking the raw coffee in water, and examining its taſte.

An *immoderate* uſe, however, of this decoction is prejudicial to the healthy, and deſtructive to the diſeaſed: it debilitates the latter ſtill more, by cauſing great undulations in the blood, tremor of the limbs, giddineſs, and a certain inſupportable timidity. It leads people of a ſanguine temperament, and particularly females, to the long train of all the faſhionable nervous diſeaſes. It frequently occaſions a diſagreeable eruption in the face, and brings on many troubleſome diſorders, occaſions bleedings of the noſe, and ſometimes ſpitting of blood, induces frequent hemorrhoids, a hectic cough, and at laſt conſumption and death.—If coffee be drunk after dinner, with a view to promote digeſtion, it requires no milk to dilute it, and render it weaker; but, if it be uſed for breakfaſt, ſome milk or cream is neceſſary, to ſheath or neutralize the empyreumatic oil it contains, which

which fires the blood, and occaſions violent fluſhings, accompanied with choleric ſenſations.

All the kinds of mock coffee, made of rye, wheat, peas, dried carrots, beet, the ſuccory-root, and the like, have little reſemblance to it, except what they acquire by their burnt taſte and empyreumatic oil. A coffee made of acorns is much recommended in aſthmatic and ſpaſmodic complaints; but as it contains an uncommon quantity of oil, which is dangerous and heating to the blood, too much circumſpection cannot be employed in the uſe of it. From my own experience, I recommend to begin with adding about one eighth, then one ſixth, and gradually a greater part of the burnt acorns to the coffee, till at length they may be uſed in equal quantities.

Chocolate, eſpecially when boiled with milk and eggs, is exceedingly nouriſhing: but the ſpices with which it is mixed, ſuch as cinnamon, cloves, muſk, vanilla, and the like, make it more heating and leſs wholeſome. Vanilla, which we always find in the Spaniſh Chocolate, is an extremely volatile and pungent aromatic; even its flavour is frequently inſupportable to hyſteric and hypochondriac perſons; it occaſions violent head-ach, trembling, giddineſs, and other ſymptoms, occurring in theſe complaints.—The common chocolate, prepared with ſugar, eggs, milk, and water, is the moſt nutritive and wholeſome; but a too frequent

and

and immoderate uſe of it is always hurtful, particularly to the individuals before alluded to, as the cacao is too fat and indigeſtible to them, and creates a falſe or forced appetite. *Cacao*, of itſelf, is leſs heating and lighter than if made into chocolate, but it is not ſo nouriſhing. The immoderate uſe of this oily beverage is apt to induce a febrile ſtate in young people, and to ſupply the ſedentary with ſuperfluous nouriſhment; while it frequently brings on, like coffee, a ſtate of irritability and uneaſineſs. To the corpulent and weak it is improper; and if they be immoderate eaters, they are haſtening to contract inflammatory diſeaſes and apoplexies. It alſo diſagrees with perſons much employed in mental purſuits; and thoſe who imagine that it will ſupply their loſſes, ſuſtained by nocturnal debaucheries of whatever kind, will find themſelves diſappointed in their hopes: by continually drinking chocolate, and uſing other nutritive ſubſtances, they will, indeed, be ſtimulated to new irregularities, but eventually at the expence of their palſied nerves, and their broken frame.—In children threatened with a waſting, or *tabes dorſalis*, as likewiſe in ſome kinds of conſumption in adults, Chocolate, with a ſufficient quantity of milk, may be beneficial; but even in theſe caſes a ſtrong decoction of roaſted oatmeal in milk, with a ſmall addition of chocolate, is much better calculated to effect a cure.

Punch

Punch is a well-known beverage, the compoſition of which requires no deſcription, as it may be made of every kind of ſpirituous liquor, diluted with water, acid, and ſugar. If a proper quantity of acid be uſed, it is an excellent antiſeptic, and well calculated to ſupply the place of wine, in reſiſting putrefaction, eſpecially if drunk cold and with plenty of ſugar: it alſo promotes perſpiration; but, if drunk hot and immoderately, it creates acidity in the ſtomach, weakens the nerves, and gives riſe to complaints of the breaſt. After a heavy meal it is improper, as it may check digeſtion, and injure the ſtomach.

Negus is one of the moſt innocent and wholeſome ſpecies of drink, eſpecially if Seville oranges be added to red Port wines, inſtead of lemons; and drunk moderately, it poſſeſſes conſiderable virtues in ſtrengthening the ſtomach; but, on account of the volatile and heating oil in the orange-peel, negus, if taken in great quantities, is more ſtimulant and drying than pure wine itſelf. Perſons troubled with the hemorrhoids, and diſeaſes of the breaſt, ſhould not indulge themſelves in this, nor in the preceding ſpecies of drink.

I cannot conclude this ſection without mentioning vinegar and oil, two ſubſtances which partly belong to the department of drink, and partly to that of ſpices.

Vinegar is an excellent preſervative of animal ſubſtances from putrefaction, eſpecially in a warm

temperature; and I cannot but regret that this invaluable liquor is too little uſed in our kitchens, as well as upon our tables. It promotes digeſtion, and is perhaps never communicated to the blood in its acid ſtate: hence it is an erroneous notion, that vinegar is detrimental to the ſecretion and quality of the milk in wet-nurſes. In ſome individuals, however, it is apt to produce a ſudorific effect, and even laxity of the bowels, on account of its aſtringent property. Uſed with moderation, as an article of ſeaſoning rather than drink, eſpecially in warm weather and with animal food, it is both ſavoury and wholeſome. But we ought to be careful to obtain *good* vinegar; for various kinds of it, which are made of ſloes, the huſks of nuts, and other ſtrong aſtringents, certainly are pernicious to health. The beſt and moſt palatable vinegar is that obtained from white wines, raiſins, and ſugar.

Oil is preferable to animal fat, but ought to be freſh, mild, and of a ſweetiſh taſte. It ſeldom or never agrees with weak ſtomachs; for in them, even in its mildeſt ſtate, it eaſily generates a rancid acrimony, extremely injurious to digeſtion. It ſhould be eaten with much bread, when uſed in ſalads or otherwiſe, as it requires a powerful and active bile to aſſimilate it to alimentary matter. Olives and almonds yield the greateſt quantity of oil; and next to Provence oil, that expreſſed from walnuts

walnuts and chefnuts, is the fweeteſt, and eaſieſt of digeſtion.

Of Spices.

Spices, of themſelves, are not nouriſhing, but are uſed merely to improve the taſte and flavour of ſubſtances, to prevent flatulency, and to promote digeſtion. Some ſpices, being extremely volatile, and occaſioning too ſtrong a ſtimulus, do more harm than good. As they are apt to heat the blood, to increaſe perſpiration, occaſionally to affect the head, and to ſtimulate the nerves, ſpices, in general, ſhould be uſed only by perſons poſſeſſing a ſtrong conſtitution, or by thoſe of a lax fibre, and cold phlegmatic habit: as, on the contrary, individuals naturally lean and dry, as well as the choleric and phlegmatic, ought to be ſparing and cautious in the uſe of heating ſpices. The moſt conducive to health would be the indigenous ſpices, though ſome of the foreign kind have now become indiſpenſable in our preſent mode of living. The moſt common, and perhaps the moſt uſeful, are:

1. *Salt.* It corrodes the fibres of plants and animals, diſorganizes the connection of parts too firm for the ſolution of the ſtomach, diſſolves the glutinous parts, and prepares them for being better digeſted by the ſtomach. Proviſions of a tough

and viſcid conſiſtence, therefore, require much ſalt; for inſtance, beef, mutton, fiſh, peas, beans, fat, &c. *—Hence ſalt beef and herrings agree ſo well with vegetables, becauſe the abundance of ſalt in the former, ſeaſons the latter. But too copious a uſe of ſalted proviſions is extremely prejudicial; they weaken the ſolids, and the blood becomes thin, acrid, and diſpoſed to putreſcency;

* There is little danger of uſing too much ſalt with *freſh* victuals, as the only conſequence ariſing from exceſs would be a ſlight laxity of the bowels.—In order to obtain ſalt as pure as poſſible, and free from the bitter magneſia, which is the great promoter of putrefaction, I take this opportunity of recommending an ingenious and ſimple proceſs lately invented by *Lord Dundonald*, one of the moſt zealous and able cultivators of the uſeful arts: Diſſolve as much common ſalt in a given quantity of boiling water as it is capable of containing in ſolution. Take another quantity of ſalt not larger than the former, and put it into a glaſs funnel, or ſimilar veſſel of wood or earthen-ware, which ought to be lined with coarſe thick linen cloth. While the ſtrong brine is hot, pour it over the dry ſalt, of which it will not diſſolve a particle, but merely waſh away the magneſia and other impurities adhering to its ſurface; and by repeating this affuſion ſeveral times, the waſhed ſalt will become tolerably pure. The whole of this proceſs depends on the principle, that water can diſſolve only a certain quantity of ſalt, and that the magneſia may be waſhed away by ſuch a ſuperſaturated ſolution, while the ſalt to which it adheres remains inſoluble. Salt thus purified will doubtleſs be more wholeſome, and more effectual for all the purpoſes of ſalting and pickling proviſions; as the magneſia contained in the common ſalt renders double, perhaps triple the quantity neceſſary, which would be required, were it in a pure ſtate, or deprived of the magneſia.

hence ariſe ſcurvy in all its ſtages, eruptions of the ſkin, conſumptions, and other diſeaſes.

2. *Sugar* is at preſent one of the firſt neceſſaries of life. It is an unfounded conjecture, that ſugar renders the blood thick or viſcid; on the contrary, it is poſſeſſed of diluent and attenuating properties. But the immoderate uſe of ſugar, eſpecially the moiſt and coarſe ſort, may in a conſiderable degree prevent digeſtion, by conſuming the oleaginous part of our fluids, impeding the aſſimilation of food, and generating mucus and acidity in the alimentary canal.

It has frequently been aſſerted, that ſugar injures the teeth: this, however, is not ſtrictly true; for it is only by its vitiating the ſtomach, and generating impure blood, that the teeth become ſympathetically affected. Hence perſons of weak digeſtion, thoſe with debilitated nerves, the hypochondriac, hyſteric women, and eſpecially children ſubject to complaints ariſing from worms, ought to uſe this luxurious ſubſtance ſparingly, and only occaſionally. If moderately uſed, it promotes digeſtion, being a gently ſolvent and ſtimulating ſalt. But, where people take it without moderation, ſugar may prevent digeſtion, not account of its ſubſtance, but by obſtructing the aſſimilation of food, ſo that it produces ſlimy and acid matters in the alimentary canal. The acid which ſugar contains renders, it an excellent remedy againſt putreſcence.

cence. The fineſt ſort of ſugar being freed of all impurities, is the beſt and moſt wholeſome. Yet, in ſore throats and other catarrhal affections, I would prefer ſugar-candy or moderately fine loaf-ſugar, to that which is double refined, on account of ſome particles of lime and clay, neceſſarily remaining in the latter, from the manner in which it is prepared.—Other ſweet ſubſtances, ſuch as honey, cannot altogether ſupply the place of ſugar, as they are not poſſeſſed of the ſame properties; but there have been already made ſome very ſucceſsful experiments with the American maple-tree, *(Acer ſaccharinus)* which afford great hopes that we may obtain this valuable and indiſpenſable ſalt, in future times, from that quarter of the globe, in ſufficient quantities, and at a reaſonable price, when the moſt flagitious of all trades, that in human fleſh, ſhall have been entirely aboliſhed *.

3. *Honey*, like ſugar, contains an acid, but many more inflammable particles; it eaſily ferments, and therefore occaſions flatulency. In ſome particular habits it is apt to occaſion gripes and looſeneſs: as a medicine, it is uſeful to the aſthmatic, to promote the expectoration of tough phlegm; and ſo far it is an uſeful detergent and aperient. But, as a part

* I muſt on this occaſion refer the reader to the account I have given of the *beet-root*, (p. 366.) which promiſes to become an invaluable, copious, and permanent ſubſtitute for ſugar.

of diet, when immoderately uſed, it is hurtful to weak ſtomachs, and ought to be avoided by people who are troubled with a ſuperabundance of bile, and whoſe humours incline to putrefaction.

4. The different ſpecies of *Pepper*, being ſtrongly heating and ſtimulating, ſhould be uſed with precaution. Yet its peculiar warming and ſtomachic virtues make it an excellent ſpice, and proper to be uſed with fat, tough, and ſmoked meat, with flatulent vegetables, with the cooling cucumbers and melons, as well as with fiſh and other ſubſtances difficult of digeſtion. Pepper ought, for theſe purpoſes, to be coarſely ground. If taken in whole grains, it imparts to the ſtomach only a ſmall part of its virtues, and cannot be reduced in digeſtion. In this form it is an old and effectual domeſtic remedy of the Germans, againſt viſcidity in the ſtomach, flatulency, weak digeſtion, and conſequent giddineſs. For theſe purpoſes, from ſix to ten pepper-grains ſhould be ſwallowed in the morning, on an empty ſtomach. Yet I would not adviſe this practice to be followed, except to ſome very vitiated ſtomachs, which have been accuſtomed to ſpices and ſpirituous liquors, and with whom the pepper may ſerve as a ſubſtitute for drams.

5. *Cubebs*, *Cardamoms*, *Vanilla*, and *Cloves*, are hot, pungent, and conſequently improper for daily uſe.—*Cubebs* are much inferior in pungency to pepper.—*Cardamoms* are a warm and grateful aromatic;

aromatic; they do not, like thoſe of the pepper kind, immoderately heat and inflame the bowels; hence they certainly deſerve the preference for common uſe. —*Vanilla** is warming, reſolvent, ſtrengthening to the ſtomach, and a remedy for flatulency. In chocolate, it aſſiſts the digeſtion of the oily ſubſtance of the cacao.

Cloves are hot and ſtimulant aromatics, but formerly ſeldom obtained genuine in this country, as the Dutch frequently mixed them with other cloves, previouſly deprived of their eſſential oil by diſtillation.—*Mace* and *Nutmeg* are leſs heating, and therefore preferable for common uſe; but the former is ſtill more ſo than the latter, which is ſuppoſed to have an aſtringent virtue, and is employed with that intention in diarrhœas and dyſenteries.—*Cinnamon* is undoubtedly the moſt delicate ſpice, but is ſeldom obtained pure from the

* Vanilla is the pod of the *Epidendron*, L. growing in Cayenne and ſome parts of Spaniſh America. The largeſt pods are ſometimes ſix inches long, narrow and almoſt triangular, ſoft, oleaginous, externally of the appearance of leather, and internally filled with a dark brown pulp, in which we find a great number of ſmall black or browniſh red and ſhining ſeeds. Theſe have a pungent aromatic and oily taſte, and a ſtrongly balſamic odour, much reſembling that of the Peruvian balſam. A very ſmall proportion of theſe ſeeds, for inſtance, a grain to an ounce, is ſufficient to impart to the Chocolate the very agreeable flavour which we generally meet with in that imported from Spain and Milan.

mercenary Dutch, who were accuſtomed to ſend us more Caſſia than real cinnamon. The *Caſſia* bark, though reſembling that of cinnamon in taſte, is much leſs heating, and certainly more beneficial for common uſe than cinnamon, which is better calculated to anſwer medicinal purpoſes. The bark of caſſia is thicker and coarſer; it breaks ſhort and ſmooth, while the cinnamon breaks fibrous and ſhivery.—*Pimento*, or Jamaica pepper, reſembles in its ſmell a mixture of cinnamon, cloves, and nutmeg, whence it has received the name of *all-ſpice*; it is milder than the Eaſt-India pepper, and is an uſeful addition to broths and ſtewed diſhes, when uſed, as it ought to be, in whole grains.—*Ginger* is one of the moſt agreeable and wholeſome ſpices, eſpecially boiled whole in beer, and drunk by people moving in the open air, and in cold weather. But this ſpice, as employed by the bakers for gingerbread, does a great deal of miſchief, eſpecially to the ſtomachs of children; though it may occaſionally be ſerviceable to travellers, early in the morning, and on an empty ſtomach *.

* If the bakers knew what the ſubſtance is, with which they gild its outſide, to invite children to eat their ill-contrived ginger-bread, I venture to hope they would deſiſt from ſo pernicious a practice. This gold leaf, or Dutch gold, is actually manufactured of braſs or copper, one of the moſt virulent metallic poiſons.

The indigenous, ſpicy, and balſamic herbs, ſuch as *parſley*, *marjoram*, *thyme*, *ſage*, and the like, cannot be too much recommended for culinary uſe, eſpecially in broths; as they are well calculated, by their aromatic virtues, to aſſiſt the digeſtion of many ſtrong articles of food, which daily cover our tables; and theſe excellent herbs are not liable to the adulterations with which moſt of the foreign ſpices are vitiated.

6. Among all the native ſpices, there is none, in my opinion, which excels, in medicinal virtues, the common *Caraway*. The ſeeds of this plant are the mildeſt and moſt uſeful carminative we poſſeſs. To people of a weak digeſtion, troubled with flatulency and colics, they afford the moſt certain relief, if uſed in ſufficient quantity; for inſtance, a table-ſpoonful at a time, early in the morning, and one hour before a meal: or ſtill better, if theſe ſeeds are plentifully uſed in bread, and among cooked victuals. Yet here I muſt caution thoſe of a hot and bilious temperament, as likewiſe individuals liable to obſtructions and habitual coſtiveneſs, not to uſe theſe ſeeds indiſcriminately, and without conſulting a profeſſional man.

Caraway-ſeeds, finely pounded, with a ſmall proportion of ginger and ſalt, ſpread upon bread and butter, and eaten every day, eſpecially early in the morning, and at night before going to bed,

is ſucceſsfully uſed in Germany as a domeſtic remedy againſt hyſterics, and will, no doubt, effectually cure the diſeaſe, provided it does not ariſe from improper diet, obſtructions of the inteſtines and other veſſels, paſſion, bile, acrid humours, and the like; in all which caſes the caraway and ginger will certainly do more harm than good; as each of theſe cauſes muſt be removed by the appoſite means.

If, however, caraway be kept in a pounded ſtate, for the purpoſe of overcoming the diſpoſition to flatulency and indigeſtion, it ſoon turns rancid, and may prove hurtful, on account of the ſtrong oil it contains.—The plant of caraway is one of the early ſpring-herbs, and makes an excellent addition to ſalads. The ſeeds, when diſtilled with ardent ſpirits, yield a very heating and pernicious oil, which renders ſuch ſpirits ſtill more detrimental to health, than when they are in a pure ſtate.

CLAS.

CLASSIFICATION

Of the various Species of Food, Drink, and Spices, according to their individual ſalubrity.

I. *FOOD.*

Diviſion Firſt.

Alimentary ſubſtances containing wholeſome fluids.

CLASS I. Articles affording ſtrong nutriment.

ORDER I. Vegeto-farinaceous ſubſtances.

Genus i. With ſoft juicy fibres.

1. *Such as contain a ſaccharine matter*; as the ſkirret or ſugar-root (*Sium Siſarum*, Linn.), the common carrot, beet, and polypody-root (*Polypodium vulgare*, L.).

2. *Sweetiſh ſubſtances affording a tender farina or meal*; as the parſnip, the turnip-rooted cabbage (*Napobraſſica*), the colewort (*Caulis Rapicius*), viper's graſs (*Scorzonera*, L.), the goat's-beard, or ſalſafy (*Tragopogon Pratenſe*, L.), the Solomon's ſeal (*Convallaria Polygonatum*, L.), parſley-root, aſparagus, turnips, and potatoes.

Genus ii. *Subſtances affording flour, or thoſe of a viſcous, earthy conſiſtence*; viz. every ſpecies

cies of grain, as wheat, rye, barley, oats, buck-wheat, millet, maize, or India-corn, the chickling-vetch (*Lathyrus Tuberoſus*, L.), and the like.

ORDER II. Gelatinous animal ſubſtances.

Genus i. *Of a ſoft and juicy muſcular ſubſtance*; viz. veal, lamb, young beef, mutton, pork, veniſon, turtle, hare, rabbits, badgers, domeſtic fowls, pheaſants, partridges, the greater number of land-fowl, oyſters, ſmall lobſters, and freſh eggs.

Genus ii. *Of a hard and tough conſiſtence*; viz. all the animals before mentioned, when old; as well as the buſtard, the ſtarling, the woodpecker, the ſparrow, the gooſe, the duck, the lapwing, muſcles, ſnails, crabs, hard boiled eggs, &c.

ORDER III. Fat or butyro-oleaginous ſubſtances.

Genus i. *Of the ſweet kind*; viz. cacao, ſweet almonds, walnuts, hazel-nuts, water-caltrops, cheſnuts, beech-nuts, caſhew-nuts (*Anacardia*), piſtachio-nuts, wild pine-apples (*Karatas*), milk, and freſh cheeſe.

Genus ii. *Of the bitteriſh and tart kind*; viz. bitter almonds, acorns, all the ſeeds of fruit, and olives.

CLASS II. Slightly nutrimental ſubſtances.

ORDER I. Thoſe of a viſcous and watery conſiſtence, or whoſe vegetable mucilage is diluted with much water.

Genus

Genus i. *Of a ſweet taſte*; viz. melons, and ſeveral ſpecies of pears and apples, ſweet citrons, lemons, oranges, figs, mulberries, raſpberries, ſweet grapes, cherries, and plums, jujube-berries, dates, &c.

Genus ii. *Of a ſweetiſh taſte*; viz. green peas and beans, white cabbage, cauliflower, ſpinach, orach, blite, or ſtrawberry-ſpinach, cucumbers, and gourds.

Genus iii. *Of a compound ſweet and bitter taſte*; viz. the ſuccory, the rampion (*Phyteuma*, L.), the borage, the ſaw-wort (*Serratula*, L.), the young ſhoots of hops, the ſow-thiſtle (*Sonchus*, L.), the hedge-muſtard, artichokes, capers, the brook-lime, endives, and lettuce.

Genus iv. *Of a mildly ſweetiſh and ſpicy taſte*; viz. celery, angelica, ſhepherd's-needle (*Scandix cerefolium*, L.), fennel, and the common balm (*Meliſſa officinalis*, L.)

Genus v. *Of an acrid taſte*; viz. radiſhes, turnip-radiſhes, horſe-radiſhes, tarragon (*Artemiſia Dracunculus*, L.), ſcurvy-graſs, and rue.

Genus vi. *Of an acid taſte*; viz. ſorrel (*Rumex acetoſa*, L.), purſlane (*Portulaca*, L.), ſour citrons, lemons, limes, cherries, plums, &c.

Genus

Genus vii. *Of a vinous quality*; viz. all ſweet apples, particularly rennets, apples of Borſtorf, and ſome few varieties from America; the pine-apple (*Ananas*), the honey or paradiſe-apple, ſhaddocks or ſina-apples, bramble-berries, ſtraw-berries, whortle-berries, gooſberries, currants, grapes, apricots, peaches, and nectarines.

Genus viii. *Of a tart and aſtringent taſte*; viz. all the wild-growing apples and pears, quinces, cran-berries, red whortle-berries, bar-berries, the green ſummer and winter pears, four apples, medlars, the fruit of the dog-roſe or hip-tree, and of the ſervice-tree, ſloes or the fruit of the black-thorn, and the green Braſilian plums.

ORDER II. *Thoſe of a gelatinous watery conſiſtence.*

To this order belong all the various ſpecies of fiſhes.

Diviſion Second.

Alimentary ſubſtances, containing unwholeſome fluids.

ORDER I. Thoſe of an acrid nature.

1. *Coarſely viſcous and ſaline ſubſtances*; viz. all ſalted and ſmoked animal food, both of quadrupeds and fiſhes.

2. *Putreſcent, or eaſily putreſcible ſubſtances*; viz. the ram, the he-goat, the bull, the otter,

otter, water-fowls, the blood of animals, roaſted eggs, tainted eggs, and laſtly all the fleſh of wild and tame animals kept too long, with a view of making it more tender.

3. *Subſtances of a furry and leathery appearance, or ſuch as diſcover a ſuſpicious acrimony*; viz. truffles, morels, and all kinds of muſhrooms.

ORDER II. *Thoſe of groſs fluids, or a coarſe earthy conſiſtence*; namely, the various leguminous ſeeds, ſuch as dried peas, beans, lentils, and the like.

II. *DRINK.*

(A) Watery Liquors.

I. *Simple or uncompounded*; namely, all kinds of common water.

II. *Mucous-watery-ſpiritous.*

1. All *fermented* liquors known under the name of beer or ale.

2. *Spicy-balſamic* liquids; ſuch as the vernal ſap of the birch and maple-trees, as well as the artificial preparations of tea, coffee, and chocolate.

3. *Sweetly-acidulated*; namely, lemonade, orgeat, mead, muſt, and the like.

(B) Spi-

(B) Spirituous Liquors.

I. *Diſtilled:* namely, all kinds of ardent ſpirits, from whatever grain or vegetable ſubſtance they may be extracted.

II. *Fermented:* All kinds of Wine.

1. *Sweet wines*; thoſe of Hungary, Spain, Italy, Greece, and the Cape wine; as likewiſe all wines made of currants, raiſins, &c.
2. *Slightly acidulated wines*; among which Champaign, Rheniſh wine, or old Hock, and that of the Moſelle, are the principal.
3. *Acid and tart wines*; to which chiefly belong the wines of Franconia and Saxony.
4. The *acidulated ſweet wines*; ſuch are moſt of the French wines, and particularly Claret; and, laſtly,
5. The *ſharp and aſtringent wines*; the chief of which are the wines of Oporto and Burgundy.

III. *SPICES.*

1. Of the *ſweet* kind; ſuch as ſugar, honey, manna, and the inſpiſſated ſap of the maple and beech-trees.
2. Of the *acid* kind; namely, the juice of citrons, lemons, unripe grapes, &c.

3. Of

3. Of the *ſaline* kind; namely, common ſalt, whether obtained in a ſolid form, as rock-ſalt, or from the evaporation of the ſea and ſalt-ſprings. Laſtly,

4. Of the *pungent and balſamic* kind; ſuch as garlic, ſhalot, onions, chives, nutmeg, mace, pepper, pimento, cubebs, vanilla, cardamoms, bay-berries, juniper-berries, ginger, calamus, cloves, cinnamon, ſaffron, caraway, coriander, fennel, parſley, dill, ſage, marjoram, thyme, penny-royal, mug-wort, hyſſop, peppermint, and rue.

CHAP. VI.

Of EXERCISE *and* REST; *their occaſional advantages and diſadvantages explained; their manner and limits aſcertained; together with directions for regulating both.*

MOTION, or bodily exerciſe, is neceſſary to the preſervation of health, which is thereby promoted, while the bounds of moderation are not exceeded. Too violent exerciſe, and a total want of it, are attended with equal diſadvantages. Much alſo depends on the kind of motion, and the various poſtures of the body.

The eſſential advantages of exerciſe are the following: bodily ſtrength is increaſed; the circulation of the blood and all other fluids promoted; the neceſſary ſecretions and excretions are duly performed; the whole maſs of the blood is cleared and refined, ſo that it cannot ſtagnate in the minuteſt capillary veſſels; and if any obſtruction ſhould begin to take place, it will be effectually relieved.

That exerciſe is enjoined by nature, we may learn from the whole ſtructure of the human body, from the number of muſcles formed for motion, and from the mechaniſm in the circula-

tion of the blood itſelf. There are, indeed, no healthier people than thoſe who have continual ſtrong exerciſe. Man in a ſtate of health is inſtinctively induced to muſcular exertion; and children that are perfectly healthy are conſtantly running about, and in almoſt uninterrupted motion.

But if exerciſe, either by its violence, or too long duration, exceed the proper limits, it naturally quickens both reſpiration and the circulation of the blood, which may occaſion the burſting of ſmall blood-veſſels, miſcarriages, inflammations, and collections of blood towards certain parts of the body, ſuch as the heart and the brain. The ſaline acrimony of the fluids is thus more diſengaged; the fat is diſſolved; and inflammatory fevers, hemorrhages, and palſies, may be the conſequences.

Violent exerciſe is particularly hurtful to thoſe who are unaccuſtomed to it, or who have committed exceſſes in drinking, and, what is ſtill worſe, in eating more than is neceſſary: and thoſe whoſe bodies have not been ſufficiently nouriſhed by food and drink, may alſo be injured by too much exerciſe.

The ſudden tranſition from a ſtate of reſt, to violent action, is likewiſe hurtful, and ſtill more ſo in hot than in cold weather. After ſtrong emotions of the mind, every ſpecies of bodily exerciſe ought to be avoided, till the tranquillity of mind return with reſt of the body; yet we

ought to guard againſt the effects of cold, as it may prove extremely prejudicial in ſuch a ſtate.

With reſpect to the manner of taking exerciſe, three principal points are to be attended to:

1. As to the *kind* of exerciſe,—the various ſpecies of which may be aptly divided into *active* and *paſſive*. The active are of a very diverſified nature; *walking*, *running*, *leaping*, *ſwimming*, *riding*, *fencing*, the *military exerciſe*, different ſorts of *athletic games*, as well as every other kind that requires muſcular exertion.—*Paſſive* exerciſe compriſes *riding* in a carriage, *ſailing*, *friction*, *ſwinging*, &c.

The more active ſpecies of exerciſe are beneficial to youth, to thoſe of a middle age, to the robuſt in general, and particularly to the corpulent, the plethoric, and thoſe whoſe evacuations are not in due proportion to their ſupplies. The paſſive kinds of exerciſe, on the contrary, are better ſuited to infants, to old, dry, and emaciated perſons, to the delicate and debilitated, and particularly to the aſthmatic and conſumptive.

2. As to the *time* in which exerciſe is moſt proper to be taken—this depends on ſo great a variety of concurrent circumſtances, that the rules by which it may be regulated, cannot be univerſal, and muſt therefore be collected from the preceding obſervations on the properties and effects of Air, Food,

Food, Drink, and ſo forth.—Other particulars, ſuch as relate to greater or leſs degrees of fatigue attending the different ſpecies of exercíſe, and the utility of it, in certain ſtates of the mind and body, muſt determine this, as well as

3. The *duration* of it;—for it is almoſt impoſſible to lay down poſitive rules, how long every individual, in every particular ſituation, may continue a certain ſpecies of exercíſe, ſo as to derive advantage. Theſe rules, as far as they can be eſtabliſhed, may be collected from the ſubſequent remarks, and then applied to the particular kinds of exercíſe, by which we may be benefited in different caſes and ſituations.

It is neceſſary firſt to obſerve, that any kind of exercíſe which we are accuſtomed to take, with a view to brace the body, is far preferable to an unuſual one, which may be attended with a contrary effect.—We ought always to begin gently, and to finiſh gradually, never abruptly.—Exercíſe in the open air has great advantages over that in houſes and cloſe apartments.—Beſides, ſtrong bodily exertions, ſuch as dancing, fencing, turning, and the like, if practiſed in ſmall and confined places, on account of the increaſed perſpiration, ſoon vitiate the air, and render it unfit for breathing.

If we take exercíſe for the ſake of health, we ought to employ ourſelves during that time with ſome agreeable object, and not perform any labour nor ſeriouſly occupy the mind. Hence certain

kinds of exercise cannot be unconditionally recommended to every individual, as means conducive to health; though they should of themselves be proper, and in other respects agree with the constitution. He who forces himself to any exercise, or performs it with reluctance, will thence derive more injury than benefit: motions or tasks, therefore, which we impose upon ourselves, as recreations after work, or after sitting and long thinking, ought to be strictly relaxations, not toilsome exertions.

Persons of an active mind find a species of relaxation, and even satisfaction, in a change of their pursuits, and particularly in the transition from hard and difficult, to more pleasant and easy avocations. To such individuals any exercise is frequently of great advantage, especially if it answer, or appear to them to be conducive to any useful purpose. To one who has habituated himself to grave and serious pursuits, it should not be recommended to join in amusements requiring bodily exertion, and attended with dissatisfaction and irksomeness; for his health will not be improved by exercise, at once unusual and unpleasant.

To continue exercise until a profuse perspiration, or a great lassitude, take place, cannot be wholesome. In the forenoon, when the stomach is empty, or, at least, not too much distended, muscular motion is both most agreeable and healthful; it strengthens digestion, and heats the body less

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than with a full ſtomach. A good appetite after it, is a proof that it has not been carried to exceſs. But it is not adviſable to take violent exerciſe immediately before a meal; as this might occaſion a deficiency of thoſe humours, which are neceſſary to promote digeſtion. If we ſit down to a ſubſtantial dinner or ſupper, immediately after a fatiguing walk, when the blood is heated, and the body is in a ſtate of perſpiration, the worſt conſequences may enſue, eſpecially if we begin with the moſt cooling diſhes, or with ſalad, or a glaſs of cold drink.

Exerciſe is likewiſe hurtful directly after meals; ſince it obſtructs digeſtion, and propels thoſe fluids too much to the ſurface of the body, which are deſigned for the ſtomach, to promote the ſolution of food, and without which many crude and undigeſted particles are forced to enter, and to mix with the blood. The old rule of the *Salernitan School*, "*Poſt cœnam ſtabis, ſeu paſſus mille meabis*," (i. e. after ſupper ſtand or walk a mile,) is as frivolous as it is abſurd; for experience ſufficiently informs us, that moſt perſons, particularly the nervous and irritable, are liable to the heartburn, eructations, and even vomiting, when they are obliged to move about, or to take any exerciſe, immediately after meals. The inſtinct of the lower animals alſo contradicts this rule; becauſe the wildeſt creatures are inclined to reſt after food.

Perſons who are under the neceſſity of moving immediately after their meals, or who have no other ſpare time for walking, muſt endeavour to overcome theſe inconveniences by cuſtom, and a more rigid temperance: they ſhould firſt take the moſt gentle kind of exerciſe, and gradually increaſe it; and, as the late hours of dining now ſo generally in faſhion, have in a manner aboliſhed heavy ſuppers, a moderate walk after a ſlight evening's repaſt, cannot be injurious. But at all events, fatiguing exerciſe, after a full meal, ſhould be delayed till the ſtomach has digeſted and aſſimilated the food, which generally takes place in the third or fourth hour after eating.—The moſt proper occupations, after dinner, are ſuch as can be performed without trouble, or great efforts of reflection, and bodily exertion; and ſuch as afford a kind of amuſement.

Walking, the moſt ſalutary and natural exerciſe, is in the power of every body; and we can adapt its degree and duration to the various circumſtances of health. By this exerciſe the appetite and perſpiration are promoted; the body is kept in a proper temperament; the mind is enlivened; the motion of the lungs is facilitated; and the rigidity and contraction of the legs, ariſing from too much ſitting, is relieved. The moſt obſtinate diſeaſes, and the moſt troubleſome hyſteric and hypochondriacal complaints, have been frequently cured by perſeverance in walking.

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The moſt proper walk for health is in an agreeable country, in a healthy, pure, dry air, amidſt ſocial and cheerful converſations, in a mild ſunſhiny day, whether in ſpring, autumn, or winter; in the ſummer mornings and afternoons, but by no means in the oppreſſive heat of the ſun. To walk in towns, although it gives exerciſe, is leſs conducive to health; becauſe the atmoſphere is generally filled with vapours ariſing from impure exhalations.

Thoſe who are not hardened againſt the viciſſitudes of the weather, muſt avoid not only hail and rain, but alſo the cold mornings and evenings, and ought, therefore, in rough and moiſt cold weather, rather to take exerciſe within the houſe, but without preventing the acceſs of air. Violent wind ſhould alſo be avoided; and if we are obliged to face it, we ought not to walk too faſt, particularly in winter, when the ſmall pores of the ſkin are compreſſed by the air.

In walking, the proper choice of places is a matter of much importance. Marſhy and damp fields ſhould be avoided; and in autumn, when the foliage is decaying, it is not adviſable to chooſe woods, groves, and damp meadows, for our pleaſure-walks. In ſummer, on the contrary, a walk in the foreſts or meadows is both agreeable and healthful. Hills and elevated ſituations deſerve particularly to be viſited, not only on account of the purer air we breathe, but alſo of the body en-

joying a variety of exercise, in ascending and descending.

The inhabitants of towns require longer walks for the preservation of their health than country-people. The latter, even with less exercise, derive vigour of body and serenity of mind, from a purer air, and more simple manners. Regular and daily walking, therefore, cannot be too much recommended to the citizen, who in the present age is so much harassed with nervous and hypochondriacal complaints; but, though this be an useful and excellent species of exercise, yet some rules ought to be observed, if we expect to derive from it the wished-for advantages.

1. We should contrive to procure as much pleasure and recreation after serious occupations, as is possible and consistent with our situation in life.

2. To read during a walk, whether the subject be of a grave or amusing nature, is a custom improper in itself, and detrimental to the eyes, besides the danger it occasions of falling: this practice not only deprives a person of the principal advantages of a walk, but people easily accustom themselves to an unsafe and ungraceful manner of carrying the body. It is attended with the worst consequences to the eyes, because the focus is continually shifted, and the retina is thus excessively fatigued.

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3. We ſhould not frequent the ſame, perhaps often a dull and unvaried walk, though moſt convenient. It is better to change the walk occaſionally, and gradually to extend the diſtance. The moſt agreeable proſpects ſhould be choſen for variety; otherwiſe the perpetually uniform walk will excite melancholy and unpleaſant ſenſations, as much as the cloſet or the ſtudy.

4. We ought to accuſtom ourſelves to a ſteady and regular, but not a quick pace.

5. An agreeable companion contributes much to ſerenity of mind: but let us rather go alone, than in dull or frivolous company, if we at all poſſeſs the art of profiting by ſolitude.

6. In the choice of our companions, we ſhould attend not only to congeniality of character and taſte, but ſhould alſo, in this exerciſe, aſſociate with thoſe whoſe pace accords with ours; for if the heavy and corpulent man make a lean and light-footed perſon the companion of his walks, he will remain behind; or be overheated and fatigued, if he endeavour to keep pace with his partner, who muſt likewiſe ſuffer from the conſtraint of ſlower motion.

7. Some people cannot ſpeak or converſe in walking, without frequent ſtops, and thus make little progreſs. From this ſingularity, they are generally much fatigued at their return, without having reaped any benefit from their exerciſe.

Running not only ſhakes the body with greater violence than walking, but it heats the head and face, and too much quickens the circulation of the fluids. Soon after a meal, it prevents digeſtion, mixes the pure fluids with the impure, and obſtructs the ſecretion of humours. If long continued, it is hurtful to every one, particularly to thoſe unaccuſtomed to it, to the plethoric, to thoſe ſubject to hemorrhages, gravelly complaints, and frequent nervous headach, and to ſedentary perſons employed in mental labour.—To run up a hill, too much fatigues and ſtrains the muſcles: and to run againſt the wind, produces giddineſs in the moſt robuſt, and makes them liable to various accidents, that may be attended with danger.

Dancing, conſidered in itſelf, and under proper limitations, is an admirable exerciſe, eſpecially in winter, when the heavy atmoſphere, much reſt, and ſitting, render the blood thick, and diſpoſe perſons to hypochondriaſis. Moderate dances have every advantage of a gentle exercise, beſides the beneficial effects produced on the mind by cheerful company and muſic. On the other hand, the more violent dances may be, and frequently are, attended with the moſt pernicious effects. The exertion of ſo many muſcles, the quick inſpiration of a warm atmoſphere in a crowded aſſembly, impel the blood to circulate with a rapidity, equal to that in the hot ſtage of a fever; and pro-

pel it to the head and breaſt, ſo that the veſſels ſeldom poſſeſs a ſufficient power of reſiſtance. If we add to this, the effect of heating liquors, of too ſudden an acceſs of the cold air ſo eagerly courted, of expoſing the face, head, and breaſt ſuddenly to its influence, together with the imprudent uſe of cooling drink, and ice itſelf, we can no longer be ſurpriſed, that ſpitting of blood, conſumption of the lungs, and inflammatory diſorders, are the frequent conſequences of ſuch exceſſes.

This violent ſpecies of exerciſe is particularly dangerous to females; and the uſe of fans, in order to cool themſelves, and thus check perſpiration, (which is wiſely deſigned by nature to produce the ſame effect, in a more ſalutary degree, if not wantonly repelled) is extremely imprudent. Delicate perſons ought, for their own ſake, to join in no other but the ſhorter and leſs fatiguing dances, eſpecially in ſummer.

A dancing-room ought to be cool, but without admitting currents of air, and without too much ſmoke from candles. It would be adviſable for the whole company, after dancing is over, and before they venture into the open air, to change their linen, and afterwards to wait a quarter, or half an hour, before they return home. During that time, they may be refreſhed by tea, and thus encounter the open air without danger. Every dancing-aſſembly ought to conclude with minuets. Perſons

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of an indiſpoſed and debilitated body, ſuch as the conſumptive, thoſe troubled with ruptures, gravelly and ſimilar complaints, ſhould not attempt to dance. Laſtly, this exerciſe is hurtful to every perſon in the hot and ſultry days of ſummer when nature renders cooling drink indiſpenſable, and when we are much inclined to perſpire, without any additional inducement.

Riding in carriages is an exerciſe the more conducive to health, that the gentle jolts tend to reſolve ſtagnations in the inteſtines of hypochondriacs, corpulent people, convaleſcents, and the conſumptive. But, if the motion of the carriage be too rapid, it is hurtful, as it not only accelerates perſpiration, before the matter of it is properly prepared, but alſo injures the ſolid parts, eſpecially the kidneys; generates congeſtions of the blood towards the head, and conſequently headach, giddineſs, vomiting, and obſtructions. If, however, we wiſh to derive all the good effects from riding in a carriage, the body of it ought not to be too nicely ſuſpended in ſtraps and ſprings, nor ſhould the motion be too ſlow. One of the windows, at leaſt, ought to be kept open, that the perſpiration and breath of ſeveral perſons, incloſed in ſo narrow a place, may not too much vitiate the air.

The infirm, who cannot enjoy the free air, in bad weather, ſhould take exerciſe upon rocking-horſes, or ſimilar contrivances, in halls and ſpacious apartments, while the upper part of the windows

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is kept open, guarding however againſt a current of air.—Laſtly, the furious driving in open carriages, in ſultry weather, may be indeed pleaſant, on account of the agreeable current of air; but it may alſo become dangerous to perſons ſubject to violent perſpiration.

Leaping, *fencing*, the faſhionable *military exerciſe*, and *manœuvring with horſes*, are violent kinds of exerciſe, which cannot be recommended to thoſe, who are not in a perfect ſtate of health, or to the corpulent and plethoric, whoſe blood-veſſels may be ſo overſtrained as to burſt by motions, which require the muſcular exertion of the whole body.

To thoſe who are otherwiſe healthy, but cannot afford to take ſufficient exerciſe, either by their particular ſituation in life, or from want of time, I would recommend a *new* ſpecies, which, in its ſalutary effects *on the whole body*, is equal if not ſuperior to any other. It ſimply conſiſts in moving the whole body, in the middle of a room, (and, if convenient, with open windows,) and let the operator, while he inclines forward upon his toes, raiſe his arms, and drop them with the alternate motion backward on his heels. Thus the *whole* muſcular ſyſtem will be duly exerciſed, without confining the motion to one particular part. This is even preferable to the *dumb-bells*, which, like every other ſpecies of *partial* exerciſe, if perſevered in,

in, are ſo far objectionable, as they require the uncommon exertion of certain muſcles, while the due and uniform circulation of the blood to thoſe parts is diſturbed, to the detriment of others which are at reſt.

To perſons who are deprived of the uſe of their limbs, and are weak and delicate, the motion of a ſedan-chair is of great benefit, if it be continued for a ſufficient time; for it diſpoſes the body to a free perſpiration. Of the ſame nature is the ſailing in barges or boats, either on lakes or rivers.

A much more active kind of bodily motion is produced by ſhort voyages at ſea. Thoſe who are unaccuſtomed to it, generally experience giddineſs of the head, nauſea, and vomiting: hence it is beneficial to an impure ſtomach. To conſumptive patients, it frequently is the laſt reſource; but it is wrong to delay it, till all other remedies have failed. For it is not in the laſt ſtage of conſumption, when the lungs are already ulcerated, or when an abſceſs has already burſt in the thorax, and the ichorous matter has been communicated to the blood, that we can expect any benefit from voyages. The changes of ſcene and climate, indeed, powerfully co-operate in effecting changes in the human ſyſtem; but, if the diſeaſe has preyed too much on the vitals of a patient, or if he is ſpitting blood, the motion of the veſſel muſt neceſſarily prove injurious. On the other hand, the debilitated, the

nervous,

nervous, and particularly the hypochondriac, cannot reſort to a better remedy than a ſhort voyage.

Riding on horſeback is, in a certain reſpect, an excellent medical remedy, by which all the muſcles, from the toes to the head, are in reciprocal motion, and which manifeſts its principal effects on the inteſtines of the abdomen. It clears the inteſtinal canal, promotes the evacuation of crude ſubſtances, ſtrengthens the ſtomach and bowels, improves digeſtion, prevents or reſolves incipient obſtructions, and facilitates the perſpiration of the whole body. To the hypochondriac it is an ineſtimable remedy; but, if the obſtructions ſhould be too far advanced, riding ought either not to be attempted at all, or practiſed in as ſlow a pace as the horſe can walk. In ſhort, it is to be undertaken with the ſame precaution as ſailing, in thoſe ſtages of conſumption, which admit of theſe remedies.

Farther, riding is not adviſable in caſes of hemorrhoids, ruptures, and gravel. The feeble and relaxed ought to begin with a gentle pace, and to increaſe it gradually; for a moderate trot is the proper medicinal mode of riding. And, if they expect to derive real advantage from riding on horſeback, they muſt neither trot too faſt, nor make uſe of a heavy and jolting horſe. Such patients as are unaccuſtomed to this exerciſe, particularly hypochondriacs, generally ride with great timidity.

timidity. Their lives are, as it were, in continual danger; by the awkward poſture of their bodies on horſeback, they are frequently hurt in parts acceſſible to injuries; ſtitches in the ſide, congeſtions of blood in the head, and violent perſpiration, counterbalance every advantage received from their excurſions. To moſt of theſe patients, if they can afford it, the riding-ſchool cannot fail to be extremely uſeful; for the regular manner of training the horſes there, their uniform and ſteady motion, the attention paid to the proper poſture of the rider, by keeping his breaſt and abdomen erect, and the legs properly extended, all are circumſtances very favourable to the patient and convaleſcent. But, even here, it is the moderate kind of exerciſe only, that promiſes real benefit in a medicinal ſenſe;—continued furious driving and hard trotting are always extremely dangerous.

For ſimilar reaſons, riding on horſeback, as well as in carriages, immediately after a meal, is ſtill more dangerous than walking. The moſt proper time for riding is the morning, when the ſtomach is empty. It ſhould, however, not be long continued; one hour, in general, is quite ſufficient; and in this reſpect riding is preferable to any other exerciſe, as it can be practiſed by perſons, whoſe buſineſs does not permit them to devote much of their time to that purpoſe.

Swimming

Swimming is likewiſe an uſeful exerciſe, which at the ſame time has the additional advantage of a cold bath. The motions and muſcular exertions, which it requires, increaſe its utility: ſome rules and precautions, however, muſt be attended to. They have been ſtated at conſiderable length in CHAP. III. "On the uſe of Baths." I ſhall, therefore, at preſent only remark, that we ſhould not enter with the feet, but with the head, into a cold bath; that the body ſhould be neither too warm nor too cold in applying this bath; and that we ſhould not chooſe dangerous rivers, or ponds, nor enter the water before the rays of the ſun have in ſome degree warmed it, and rendered it more temperate. The ſenſation produced by cold water is indeed leſs to be apprehended, than the conſequences ariſing from imprudently plunging into it, when the body is either too much cooled or heated.

Playing at *Hand-ball, Cricket*, and the like, have a more powerful effect on the muſcles than the abdomen; and are therefore, in one reſpect, unavailing to ſedentary people, and on the other hand unneceſſarily fatiguing.—*Carouſſels*, or riding on machines in a circle, are movements which require too much muſcular exertion of the debilitated, whoſe ſtrength admits only of a moderate exerciſe. Theſe, as well as *ſwinging machines*, and the lately contrived *ſwinging cars*, moving on a wheel with perpendicular pivots, are the leaſt proper for thoſe

who are inclined to giddineſs, and nervous ſymptoms in general, on account of the fear, and ſometimes the dangerous accidents attending them. But, at the ſame time, both ſpecies of exerciſe are extremely favourable in ſuch ſtates of health, as require an uniform and gentle motion of the whole body, in the pure and open air, particularly in the high ſwinging cars, which are well calculated for that purpoſe.

Speaking is one of the moſt healthful and neceſſary ſpecies of exerciſe; and, without any ludicrous idea, I may aſſert, that this practice is particularly ſalutary to the female ſex, who are more confined at home than men. Here, however, as in other caſes, exceſs is prejudicial. Loud reading and ſpeaking are of ſingular advantage to literary men, affording them good ſubſtitutes for other kinds of exerciſe, for which they ſeldom have ſufficient leiſure or opportunities. It is to this cauſe, we may juſtly aſcribe the longevity of many ſchoolmaſters, and teachers in univerſities, who, notwithſtanding their ſedentary employments, and the vitiated air which they daily breathe in ſchool-rooms, attain to a long and healthy life.—To ſpeak very loud, and to exerciſe the voice immediately after a meal, is pernicious to the lungs, as well as to the organs of digeſtion.

Singing promotes the lively circulation of the blood through the lungs, and all parts of the body; the lungs, as well as the abdominal inteſ-

tines, are ſhaken by the vibrating motion of the air, in a manner very conducive to their ſalubrity. The phlegm, and other noxious matter, collected about the pulmonary veſſels, are thereby reſolved and carried away, ſo that they cannot mix with the blood, and the moſt dangerous ſtagnations in the ſmaller veſſels are thus prevented: the blood is uniformly diſtributed and driven to the larger veins and arteries. For the ſame law of nature, by which river-water is preſerved ſweet and freſh, while that of pools and ditches ſtagnates and putrifies, is alſo fully applicable here.—The air inhaled in ſinging is of ſimilar ſervice to us, as the current to the water; perſpiration is thereby promoted, and the mind is enlivened with the body. Thoſe ſedentary artificers or mechanics, who from habit almoſt conſtantly ſing at their work, unintentionally contribute much to the preſervation of their health.

All *Wind Inſtruments* are more or leſs hurtful; for, as much air is thereby introduced into the lungs, and as it is but gradually and partially emitted, that organ ſoon becomes debilitated. Hence perſons of weak lungs, who are very fond of playing the flute, hautboy, or French horn, are frequently afflicted with ſpitting of blood, cough, ſhortneſs of breath, and pulmonary conſumption. Beſides, blowing checks the circulation of the blood through the lungs, accumulates it towards the head, and diſpoſes ſuch muſicians

to apoplexy. By the violent expulſion of the air, the abdominal muſcles are contracted, all the parts of the abdomen are compreſſed, the circulation of the fluids is retarded, and many unpleaſant and frequently fatal conſequences are induced.

There are other kinds of *muſical inſtruments* which, in a dietetical view, deſerve to be condemned. Such is the *Harmonica*, which, by the rotation of the glaſſes on the fingers, (a kind of negative electricity) induces a great degree of nervous weakneſs. And this effect is much accelerated by the acute and vibrating ſounds of this inſtrument, by which the organs of hearing are intenſely affected. Perhaps all ſtringed inſtruments, which are played by the touch of the fingers, ſuch as the harp, the guitar, and the violin, produce a ſimilar effect on the nervous ſyſtem; eſpecially if it be true, that the *papillæ*, or the points of the fingers, are the ſtrongeſt conductors of the ſuppoſed nervous fluid. It is at leaſt probable, that to be able to play on ſuch inſtruments, with expreſſion, requires a more than common ſenſibility of the nerves, which indeed may be ſometimes artificially acquired, but to the detriment of health. For it cannot be doubted, that a local excitement of irritability may be gradually propagated over the whole nervous ſyſtem; and that, from raiſing ſome parts of the body to a preternatural ſtate of ſenſibility, the common cha-

racter of thoſe who are called *Virtuoſi*, is generally marked with nervous debility. Every body knows in how extraordinary a manner muſic may influence the mind; that the paſſions of perſons of ſenſibility may be moſt effectually rouſed and allayed by it; nay that, in ſome individuals, every feeling of the mind can be affected, at pleaſure, by the various modifications of harmony. As, therefore, ſadneſs, grief, and other depreſſing paſſions, may be alleviated by appropriate muſic, it is an exerciſe deſerving every commendation. Yet we muſt neither expect to cure by it diſeaſes of the mind, nor their concomitant bodily diſorders: this is beyond the power of muſic, which acts as a palliative only, or as a nervous ſtimulus, the effect of which is inſtantaneous, but of ſhort duration. For, as ſoon as the exciting cauſe ceaſes, it is ſucceeded by an uncomfortable ſenſation of debility and relaxation. It is even probable, that muſic, like all other anodyne and ſoothing remedies, may in the end increaſe the diſpoſition to nervous weakneſs, by its too frequent repetition.

Laſtly, the poſture of the body, in practiſing muſic, alſo deſerves attention; as the breaſt and abdomen may be compreſſed by ſtooping, ſo as to cauſe very ſerious complaints; and as the eyes may be injured by reading the notes, at too great or ſhort a diſtance, eſpecially for the double keys of the harp and harpſichord: indeed, reading muſic

is in general more fatiguing to the eyes, than any other kind of exertion.

Friction of the body, which can be performed either by the naked hand, a piece of flannel, or ſtill better by a fleſh-brush, is one of the moſt gentle and uſeful ſpecies of exerciſe. The whole body may be ſubjected to this mild operation, but principally the abdomen, the ſpine, the arms, and legs. It clears the ſkin, reſolves ſtagnating humours, promotes perſpiration, ſtrengthens the fibres, and increaſes the warmth and energy of the whole ſyſtem. In rheumatiſm, gout, palſy, and green-ſickneſs, it is an excellent remedy.

Daily friction of the whole body was with the ancients, and ſtill is in the Eaſt Indies, conſidered one of the moſt indiſpenſable requiſites of a people, who by their indolent manner of life ſeem to have adopted it more with a view of indulging in ſenſual pleaſures, than as the means of preſerving health. It is, however, one of the moſt ſalutary expedients, by which the whole body receives nearly as much benefit, as from a tepid bath, and which, as being in the power of every perſon, ought to be more frequently and more generally uſed. To the ſedentary, the hypochondriac, and perſons troubled with indigeſtion, who cannot afford leiſure to take ſufficient exerciſe, the daily friction of the belly, in particular, cannot be too much recommended as a ſubſtitute for other means, in

order

order to diſſolve pituitous ſtagnations, which may be forming in the abdomen, and to re-invigorate the veſſels. And though it be not attended with all the advantages enjoyed from exerciſe in the open air, it ſtill produces a powerful effect on the organs of digeſtion; for the moderate exerciſe of a whole day will ſcarcely invigorate the abdominal veſſels, and particularly the ſtomach, ſo much as the friction of theſe parts, continued for half an hour. But, if it be intended for theſe beneficial purpoſes, it ſhould be performed in the morning, on an empty ſtomach, or in bed before we riſe, gently and ſteadily in a circular direction, and at leaſt for five or ten minutes at a time.

In a weak ſtate of the abdomen, and the nerves in general, we may derive ſtill more ſalutary effects from friction, if the ſtomach and the whole abdomen be rubbed every morning, and at night, before going to bed, with a ſponge, or a piece of flannel dipped in cold water. This poſſeſſes ſtill greater advantages over internal medicines, becauſe it can be ſafely employed, even in caſes where the alimentary canal, from its obſtructed ſtate, ſcarcely admits of any other remedies, while friction, and the affuſion of cold water, generally relieve theſe obſtructions, and even habitual coſtiveneſs.

Motion or exerciſe ought to be continued only till we feel an agreeable laſſitude, and a ſenſible degree of perſpiration. If it be carried farther, it weakens, inſtead of ſtrengthening the

body, and leaves behind diſagreeable conſequences to the lungs, filled with heated blood. Even the robuſt man will experience ſome, though leſs unpleaſant effects than the debilitated, if he has committed an exceſs of this nature.

After having taken exerciſe, we ſhould not venture to reſt in a cool place, nor upon a green plot; ſtill leſs ſhould we expoſe ourſelves to a current of air; but rather frequent a place warmed by the mild rays of the ſun in ſummer, or a moderately warm apartment in winter, ſo that the ſudden change of temperature may not injure us, by ſuppreſſing perſpiration.

For the ſame reaſons, the thirſt we generally feel after exerciſe, ought not to be inſtantly ſatisfied by cooling drink. It is however allowable to drink ſome warm or diluent liquors, if we cannot wait till the natural warmth be reſtored. The late Dr. Fothergill very properly adviſed, that people in a ſtate of perſpiration ſhould, to avoid all danger, eat a mouthful of bread, with a little ſalt, and thus gain time, till the blood and the liquor to be drunk had acquired a more equal temperature. A ſmall quantity of vinegar, or the juice of lemons in water, is well calculated to quench thirſt, and at the ſame time to promote perſpiration. Travellers on foot ought to be upon their guard againſt too much drink; for, the more liquids they take, the more they will perſpire, and the greater will be the ſubſequent relaxation and danger

ger of catching cold, when their clothes are ſaturated with perſpirable matter. They ſhould alſo abſtain from drink productive of a laxative effect, which would cauſe debility, and even faintings. The moſt ſuitable of all ſubſtances to mix with water, is the pure or eſſential acid of tartar, with a ſmall quantity of ſugar. This affords a cooling and refreſhing beverage, without relaxing the bowels, like lemonade. Perſons with whom the vitriolic acid agrees, may take a tea-ſpoonful of a mixture, conſiſting of ſix or eight parts of ſpirits of wine and one part of vitriolic acid, to a pint of water. A beverage made of a weak acidulated wine and water is cooling and ſtrengthening. In the very cold weather of winter, people ought to avoid all heating liquors, ſuch as ardent ſpirits and ſtrong wines. Warm diluents, ſuch as tea and coffee, are equally improper, and a poor protection againſt cold; for their warming property is of ſhort duration; they are productive of debility, a more torpid circulation of the blood, and conſequently of an increaſe of cold. It is much better to eat previouſly ſome ſolid meat, by which the digeſtive organs may be exerciſed, ſuch as cold animal food and bread, and to drink after it ſome bitter ale or beer. On the other hand, when we ſuffer from intenſe cold, or have been expoſed to the wind and weather, a few cups of ſtrong tea, with plenty of cream and ſugar, is then the beſt and ſafeſt refreſhment: and it is equally invigo-

rating

rating in ſummer after extreme heat and fatigue.—Feeble individuals, whoſe ſtomachs generate much acid, and who are frequently troubled on their journies with a ſudden voracious appetite, are liable to the moſt painful attacks of weakneſs on the road, and on that account they ought always to be provided with ſome kind of ſolid food in their excurſions. Such perſons ſhould carefully abſtain from the uſe of wine, brandy, or other heating and ſtimulating cordials, while travelling, eſpecially in the morning: they might with more advantage eat ſome bread and butter, warm or buttered ale, ſtrong broth, gruel, or the like nouriſhing ſubſtances.

We are now to conſider the conſequences ariſing from the *want of exercise*. This, indeed, is ſtill more debilitating than too violent motion. The ſolid parts of the human frame are relaxed by it; the circulation of the fluids is retarded; they gradually ſtagnate in the ſmaller capillary veſſels; the ſecretions are diminiſhed; and abundance of moiſture or fat is generated, which renders the body, as well as the mind, more indolent and lifeleſs;—relaxation of the muſcles, obſtructions of the inteſtines, hemorrhoids, apoplectic fits, various ſpecies of dropſy, and at length a premature death, are the ſad conſequences. Men of letters are the moſt unhealthy of all human beings, becauſe their bodies have ſcarcely any other exerciſe but the imperceptible motion of the arms.—Want of appetite,

petite, flatulency, anxiety, at one time obſtructions, at another diarrhœa, and the moſt diverſified nervous ſymptoms, are their attendants. Sleep is beyond their reach; a thouſand tormenting inconveniences, hypochondriaſis, and at length a complete ſtate of melancholy is too frequently their lot. Temperance alone will not remedy all theſe evils; for, ſince we cannot remain vigorous and healthy for two days together, with the ſame maſs of blood, a new acceſs of the pureſt and moſt ſubtle parts of our fluids muſt daily ſupport the nervous ſyſtem, in order to preſerve its regular functions. If this be not continually reſtored, weakneſs and relaxation of body and mind are the inevitable conſequences; with this difference only, that in a ſtate of debility, from too much bodily exerciſe, the thick and coarſe particles of the fluids are carried into circulation with the others, and the next meal, or the firſt ſleep after it, very ſoon ſupplies the deficiency: in mental labour, on the contrary, digeſtion is interrupted, the crude and viſcid parts of food remain unaſſimilated, and the body is prevented from receiving its proper nouriſhment. In like manner, the ſedentary mechanics and artificers are affected; particularly ſhoemakers, taylors, and weavers. They experience hardſhips ſimilar to thoſe, to which men of letters are ſubject; and it has been frequently obſerved, that they are very liable to diſeaſes of the mind, and eſpecially to religious fanaticiſm.

Standing,

Standing, though uſeful as a change after long ſitting, is apt to occaſion accumulations of blood, or rather of the ſerous part of it, in the lower extremities. Swelled legs are therefore common among printers. It is a poſture little calculated to relieve the ſtudious, and the body is at the ſame time more fatigued by ſtanding than ſitting. If we ſit much, we muſt attend to the two following rules; 1. that no part of the body be compreſſed; and 2. that it be not too long continued at one time. The common manner of ſitting, with the head reclined, is extremely pernicious; for the circulation of the fluids in the abdomen is thus checked; the inteſtines are compreſſed, and the veſſels of the breaſt contracted. The head alſo ſuffers by bending it too much forward; as the blood is thereby impelled to circulate towards it more copiouſly, than is conſiſtent with health. The ſtudious, eſpecially, would do well, not to perform all their avocations in a ſedentary poſture, but occaſionally to relieve at once their body and mind, by ſtanding, or walking about the room. The mode of ſitting ought alſo to be made as convenient as poſſible, ſo that both the body and head may be kept in an almoſt perpendicular poſture; that the breaſt and abdomen may not be obſtructed in their alternate expanſion; and laſtly, that the arms and legs may not be held in a crooked and unnatural poſition; all this ſhould be particularly attended to, by

thoſe

thoſe who teach children to read and write. The preſſure of the abdominal muſcles may in a great meaſure be prevented by high tables and deſks, and by raiſed ſtools or chairs, upon which a perſon rather ſtands than ſits.

To lie or reſt horizontally, is attended with a ceſſation of all exerciſe. If the head be placed low, and this too long continued, there may ariſe head-ach, by the increaſed preſſure of the blood on the brain. Here, likewiſe, a frequent change of poſture is neceſſary, in order to obſtruct none of the bodily functions, and to prevent the ſtagnation of humours.

Finally, the *faculties of the mind* deſerve no leſs attention than thoſe of the body.

Alternate changes of tranquillity and activity are equally beneficial to the mind, as reſt and exerciſe to the body. Too long continued, too frequent, and too profound reflections, are alike injurious to both. The ſame powers are diminiſhed here as in bodily labour, and in a ſtill greater proportion; for muſcular exertions, though fatiguing, are reproductive of new vigour. This may indeed be alſo applied to mental labour, by which the mind improves in capacity, but the body is a ſufferer from every unuſual exertion of the mind; and, with the body, the mind by degrees alſo becomes diſeaſed:—in profound meditations the vital ſpirits are, as it were, withdrawn from the organs of

ſenſe;

ſenſe; the body is for the time almoſt deprived of ſenſation; and we frequently become in a manner abſent. Reflection always directed to one object, not only debilitates, but alſo ſuppreſſes the other faculties of the mind, and does not permit it to deviate from its favourite purſuit. Thus, we ſometimes ſee melancholy, nay madneſs itſelf, overwhelm perſons devoted to the contemplation of one particular object. Intenſe and abſtruſe thought, in general, if not checked in time, may be attended with ſtupor or inſanity.

To enable us to reflect ſeriouſly upon an important ſubject, time and place ought to be ſo choſen, that the mind may be diverted by no other object; for two ideas cannot be conceived at one time. Hence we ſhould ſtudy in an apartment which is not too light, and where we are undiſturbed by noiſe;—the muſcles ſhould not be actively employed during ſtudy: it is therefore improper and pernicious, immediately after meals, or before digeſtion be completed. The morning, indeed, is the moſt profitable time for ſtudy; though neceſſity and cuſtom make many exceptions; ſo that ſome perſons, from gradual practice, are able to perform their mental taſks during the greateſt noiſe, and in a room full of children.

Much and frequent inactivity of mind agrees, indeed, well with the body, which in that ſtate fully performs its functions, but it becomes unwieldy,

wieldy, insomuch as at length to stupify the mental powers: the ideas become obscure and confused; and a total loss of memory, or oblivion of the past, is but too often the consequent effect of such indolence.

CHAP. VII.

Of SLEEPING *and* WAKING; *their juſt proportion with regard to age, the conſtitution of the body, mode of life, and other circumſtances.*

SLEEP and wakefulneſs are nearly in the ſame relation to each other as exerciſe and reſt. Waking always pre-ſuppoſes a certain degree of activity; all the *natural* functions, digeſtion, the preparation of the chyle and blood, aſſimilation, ſecretion, and excretion, are then more vigorouſly performed, and would ſoon exhauſt their powers, if ſleep did not reſtore to them the beneficial and indiſpenſable ſupplies.

Sleep is therefore neceſſary to exiſtence and health, and it is an improper and fruitleſs attempt, to deprive ourſelves, by an ill-directed activity, of the requiſite portion of this refreſhment; for Nature will maintain her rights, in ſpite of our efforts to ſubvert them: and both body and mind ſuffer, without attaining any real advantage from an extravagant watchfulneſs.

Before I proceed to inquire into the conſequences ariſing from either too much or too little ſleep, it will be uſeful to premiſe a conciſe theory, or the phyſiology, of this ſuſpenſion of the mental powers.

When

When the body is fatigued, when the ſenſes, together with the voluntary motions of the muſcles, have been for ſome time active, we ſtand in need of the alternation of reſt, which is obtained by ſleep. During a ſound ſleep, the ſenſes, and the voluntary muſcular motions, are not exerciſed; but the *vital* functions, ſuch as reſpiration, and the circulation of the blood, as well as moſt of the natural functions aforementioned, are regularly though more ſlowly performed. During ſleep, therefore, the motion of the heart and the blood-veſſels, even the action of the brain and the nervous ſyſtem, as likewiſe the periſtaltic or vermicular motion of the ſtomach and the inteſtines, and the ſecretion of the fluids, are performed in an uniform and ſteady manner. Previous to ſleep, we perceive a languor of the ſenſes, and of the muſcles which are ſubject to our will, and of thoſe alſo which keep the body in an erect poſture; the head inclines downwards, the upper eye-lid and the lower jaw-bone likewiſe ſink, the venous blood accumulates towards the heart, and compels us to yawn, in order to facilitate the tranſition of the blood into the lungs, by the deep breathing which takes place: finally, the brain itſelf, as the organ of the mind, appears to be fatigued; hence our ideas become irregular, and there ariſes a kind of faint imbecility of the underſtanding. That the motions of the heart are ſtronger during ſleep, and that perſpiration is more active, muſt be aſcribed to

the warmth of the bed-cloaths, by which the inſenſible perſpiration ſoftens and relaxes the ſkin. But a perſon, who ſleeps in his uſual dreſs, will feel chilly; and thoſe animals that ſleep long, as the hedge-hog, the murmur-deer (*Marmota Alpina*, L.), ſuffer an extraordinary degree of cold.

As the ſenſes are inactive during ſleep; as the nervous energy is leſs exhauſted, and its ſecretion continued, a new ſupply of it is collected, and the organs of ſenſe, as well as the muſcles, receive additional vigour. This occaſions us to awake, particularly if rouſed by any ſtimulus. While we are aſleep, the nutritive particles can more eaſily attach themſelves to the fibres, and fat alſo is more readily generated, from the retarded circulation of the blood. After we have ſlept ſufficiently, we are apt, on awaking, to ſtretch the limbs and joints of the body, and ſometimes to yawn: the latter, with an inſtinctive deſire of promoting the circulation of blood through the lungs, which was retarded during ſleep; the former, namely ſtretching, in order to aſſiſt the extenſor muſcles, which, by the flexion of the limbs in ſleep, had been more extended, and in order to expand again the flexor muſcles, that had been moderately contracted.

The proximate cauſe of ſleep appears to be an impeded motion of the nervous fluid in the brain. This motion is produced by a kind of collapſe of the ſubtle inſertions of the nerves, as well as by a mechanical compreſſion of them. Hence we can explain,

explain, how things ſo totally oppoſite are able to produce ſleep, when they either exhauſt or compreſs the tubes of the nerves. Of the former kind is every violent and fatiguing ſpecies of labour, a conſiderable loſs of blood, perſpiration increaſed by external heat, and every thing that withdraws the blood from the head; for inſtance, warm baths of the lower extremities, a ſtomach filled with much food, &c. Of the latter kind of incitements to ſleep, namely, thoſe that act by compreſſion, is every mechanical preſſure on the brain, whether it proceed from water accumulated in its ventricles, from a local depreſſion or fracture of the cranium, or from extravaſated blood:—in like manner, the impeded regreſs of the blood from the brain, or the increaſed acceſs of it to that organ, may effect ſuch a preſſure, by diſtending the blood-veſſels, as is the caſe in uſing narcotics, or wine and other ſpiritous liquors; and, laſtly, an intenſe degree of cold, as well as the ſtate of an approaching apoplexy.—Sleep is promoted by tranquillity of mind; by the abſence of every ſtimulus to the body; by ſilence and darkneſs around us; by a complete reſt of the ſenſes; by gently and uniformly affecting one of the ſenſes, for inſtance, by muſic or reading; and, laſtly, by a gentle external motion of the whole body, as by rocking or ſailing. On the other hand, every painful ſenſation, a great noiſe, a bright light, ſtrong exertions of mental powers, and particularly violent

paſſions, are calculated to prevent ſleep. Thus likewiſe ſleep may be impeded by hot, ſpicy, and other kinds of drink, which are ſaid to occaſion a more ſpeedy ſecretion of the nervous fluid.

Dreams are vagaries of the imagination, and in moſt inſtances proceed from external ſenſations. They take place only, when our ſleep is unſound, in which caſe the brain and nervous ſyſtem are capable of performing the motions above deſcribed. We ſeldom dream during the firſt hours of ſleep; perhaps, becauſe the nervous fluid is then too much exhauſted; but dreams rather occur towards the morning, when this fluid has been, in ſome meaſure, reſtored. Every thing capable of interrupting the tranquillity of mind and body, may produce dreams. Such are the various kinds of grief and ſorrow, exertions of the mind, affections and paſſions, crude and undigeſted food, a hard and inconvenient poſture of the body. Thoſe ideas which have lately occupied our mind, or made a lively impreſſion upon us, generally conſtitute the principal ſubject of a dream, and more or leſs employ our imagination, when we are aſleep. Animals are likewiſe apt to dream, but ſeldom; and even men living temperately, and enjoying a perfect ſtate of health, are ſeldom diſturbed with this play of the fancy. Nay, there are examples of lively and ſpirited perſons who never dream. The great phyſiologiſt, HALLER, conſiders dreaming as a ſymptom of diſeaſe, or as a ſtimulating cauſe, by which

which the perfect tranquillity of the *ſenſorium* is interrupted. Hence, that ſleep is the moſt refreſhing, which is undiſturbed by dreams, or, at leaſt, when we have no clear recollection of them.

I have before obſerved, that moſt of our dreams are ſports of fancy, and derive their origin chiefly from external impreſſions: almoſt every thing we ſee and hear, when awake, leads our imagination to collateral notions or repreſentations, which, in a manner ſpontaneouſly, and without the leaſt effort, aſſociate with external ſenſations. The place where a perſon whom we love formerly reſided, a dreſs ſimilar to that which we have ſeen her wear, the objects that employed her attention, no ſooner catch our eye, than ſhe immediately occupies our mind. And, though theſe images, aſſociating with external ſenſations, do not arrive at complete conſciouſneſs, within the power of imagination, yet even in their latent ſtate they may become very ſtrong and permanent. I have been informed, for inſtance, of a young man, who was attacked with convulſions, every time he heard the name of *Jeſus* repeated; owing, it ſeems, to the circumſtance of his mother having once invoked the name of Jeſus in a terrific voice and manner, when ſhe, as well as the boy, were much frightened by a tremendous peal of thunder. But this is only an indirect demonſtration of the exiſtence of a faculty, which is very active in dreams, and which may be aptly called the *ſubreaſoning faculty*, or the power

of abſtracting ſimilarities. The concluſions, thus formed, are more frequent and active, than in the waking ſtate; becauſe they are ſeldom controlled by the reflections of reaſon. I ſhall make uſe of one illuſtration only.

Very frequently we find, that in a dream a ſeries of repreſentations is ſuddenly interrupted, and another ſeries of a very different kind occupies its place. This happens, as ſoon as an idea aſſociates itſelf; which, from whatever cauſe, is more intereſting than that immediately preceding. It then becomes the prevailing one, and determines the aſſociation. Yet by this, too, the imagination is frequently reconducted to the former ſeries. The interruption in the courſe of the preceding occurrences is remarked, and the power of abſtracting ſimilarities is in ſearch of the cauſe of this irregularity. Hence, in ſuch caſes, there uſually happens ſome unfortunate event or other, which occaſions the interruption of the ſtory. The repreſenting power may ſuddenly again conduct us to another ſeries of ideas, and thus the imagination may be led by the ſubreaſoning power before defined, from one ſcene to another. Of this kind, for inſtance, is the following remarkable dream, as related and explained in the words of Prof. MAASS, of *Halle*: "I dreamed once," ſays he, "that the Pope viſited me. He commanded me to open my deſk, and he carefully examined all the papers it contained. While he was thus employed,

employed, a very ſparkling diamond fell out of his triple crown into my deſk, of which, however, neither of us took any notice. As ſoon as the Pope had withdrawn, I retired to bed, but was ſoon obliged to riſe, on account of a thick ſmoke, the cauſe of which I had yet to learn. Upon examination, I diſcovered, that the diamond had ſet fire to the papers in my deſk, and burnt them to aſhes."

This dream deſerves a ſhort analyſis, on account of the peculiar circumſtances which occaſioned it. "On the preceding evening," ſays Prof. Maaſs, "I was viſited by a friend, with whom I had a lively converſation, upon Joſeph II.'s ſuppreſſion of monaſteries and convents. With this idea, though I did not become conſcious of it in the dream, was aſſociated the viſit which the Pope publicly paid the Emperor Joſeph at Vienna, in conſequence of the meaſures taken againſt the clergy; and with this again was combined, however faintly, the repreſentation of the viſit, which had been paid me by my friend. Theſe two events were, by the ſubreaſoning faculty, compounded into one, according to the eſtabliſhed rule—that things which agree in their parts, do alſo correſpond as to the whole;—hence the Pope's viſit was changed into a viſit made to me. The ſubreaſoning faculty, then, in order to account for this extraordinary viſit, fixed upon that which was the moſt important object in my room, namely, the deſk, or rather the papers locked

up in it. That a diamond fell out of the triple crown, was a collateral aſſociation, which was owing merely to the repreſentation of the deſk. Some days before, when opening the deſk, I had broken the glaſs of my watch, which I held in my hand, ſo that the glaſs fell among the papers. Hence no farther attention was paid to the diamond, being a repreſentation of a collateral ſeries of things. But afterwards, the repreſentation of the ſparkling ſtone was again excited, and became the prevailing idea; hence it determined the ſucceeding aſſociation. On account of its ſimilarity, it excited the repreſentation of fire, and was indeed confounded with it. Hence aroſe fire and ſmoke. But, in the event, the writings only were burnt, not the deſk itſelf; to which, being of comparatively leſs value, the attention was not at all directed."

It is farther undeniable, that there are in the human mind certain obſcure repreſentations, and that it is of great advantage to be convinced of the reality of theſe images, if deſirous of perceiving the connection ſubſiſting among the operations of the imagination. Of the numerous phenomena, founded on obſcure ideas, and which conſequently prove their exiſtence, I ſhall only remark the following. It is a well-known fact, that many dreams originate in the impreſſions made on the body during ſleep; that they conſiſt of analogous images, or ſuch as are aſſociated with ſenſations that would ariſe from theſe impreſſions during a waking ſtate.

Hence,

Hence, for inſtance, if our legs are placed in a perpendicular poſture, we are often terrified by a dream, that implies the imminent danger of falling from a ſteep rock or precipice. The ſoul muſt repreſent to itſelf theſe external impreſſions in a lively manner, otherwiſe no ideal picture could be thus excited. But, as we do not become at all conſcious of them, they are but faintly and obſcurely repreſented.

If we make a reſolution of riſing earlier in the morning than uſual; and if we imprint this determination on our mind, immediately before going to bed, we are almoſt certain to ſucceed. Now it is ſelf-evident, that this ſucceſs cannot be aſcribed to the efforts of the body, but altogether to the mind; which, probably, during ſleep perceives and computes the duration of time, ſo that it makes an impreſſion on the body, whereby we are enabled to awake at an appointed hour. Yet all this takes place, without our conſciouſneſs, and the repreſentations remain obſcure.

Many productions of art are ſo complicated, that a variety of ſimple conceptions are requiſite to lay the foundation of them; yet the artiſt is almoſt entirely unconſcious of theſe individual notions. Thus, a perſon performs a piece of muſic, without being obliged to reflect, in a conſcious manner, on the ſignification of the notes, their value, and the order of the fingers he muſt obſerve; nay, even without clearly diſtinguiſhing the ſtrings of the

harp, or the keys of the harpſichord. We cannot attribute this to the mechaniſm of the body, which might gradually accuſtom itſelf to the accurate placing of the fingers. This could be applied only where we play a piece of muſic, frequently practiſed; but it is totally inapplicable to a new piece, which is played by the profeſſor with equal facility, though he has never ſeen it before. In the latter caſe, there muſt neceſſarily ariſe an ideal repreſentation, or an act of judgment, previous to every motion of the fingers.

Theſe arguments, I hope, ſufficiently evince the occurrence of ſuch obſcure notions and repreſentations, as lay the ground-work of all our dreams.—That among the thouſands and millions of fanciful and ſuppoſed ominous dreams, ſome are occaſionally realiſed, is not a matter of aſtoniſhment; but many people, particularly the victims of the lottery, too frequently find reaſon to regret, that theſe omens are not always to be depended upon; if thoſe deluded viſionaries would permit themſelves to reaſon, and to calculate, they would diſcover, that there are as many chances againſt their dream being realiſed, as there are againſt their ticket turning up a twenty thouſand pounds prize.

Before I quit this ſubject, I ſhall relate an extraordinary dream of the celebrated Italian, GALILEO. When this great man, at a very advanced age, had loſt the uſe of his eyes, he was once conducted

ducted in his walks over a beautiful plain, by his pupil, TORICELLI. "Once," ſaid the aged ſage, "my eyes permitted me to enjoy the charms of theſe fields. But now, ſince their light is extinguiſhed, theſe pleaſures are loſt to me for ever. Heaven juſtly inflicts the puniſhment which was predicted to me many years ago. When in priſon, and impatiently languiſhing for liberty, I began to be diſcontented with the ways of Providence; COPERNICUS appeared to me in a dream; his celeſtial ſpirit conducted me over luminous ſtars, and, in a threatening voice, reprehended me for having murmured againſt him, at whoſe *fiat* all theſe worlds had proceeded from nothing. "A time ſhall come," ſaid he, "when thine eyes ſhall refuſe to aſſiſt thee in contemplating theſe wonders."

After this long, though I hope not unintereſting digreſſion, I proceed to ſtate the conſequences ariſing from too much or too little ſleep.

To continue in a waking ſtate, beyond a proper time, conſumes the vital ſpirits, diſorganizes the nerves, and cauſes ſo many uneaſy ſenſations, that a conſiderable while muſt elapſe, before we can fall aſleep, namely, until their greateſt violence has abated. The fluids of the body become acrid, the fat is conſumed, and there ariſes at length an inclination to vertigo, violent head-ach, anxiety, actions without connection, without deſign, and without conſiſtency. Thoſe who indulge themſelves in much ſleep, are ſeldom liable to very ſtrong paſſions.

paſſions. Perſons, on the contrary, who ſleep too little, frequently contract a violent and vindictive temper. Long-continued wakefulneſs is capable of changing the temper and diſpoſition of mind of the moſt mild and gentle; of effecting a complete alteration of their features, and, at length, of occaſioning the moſt ſingular whims, the ſtrangeſt deviations in the power of imagination, and, in the end, abſolute inſanity.

Exceſs of ſleep, however, is not leſs prejudicial. The whole body ſinks gradually under a complete ſtate of inactivity, the ſolid parts become relaxed, the blood circulates ſlowly, and remains particularly long in the head: perſpiration is diſordered, the fluids are incraſſated, the body increaſes in fat and thick humours, and is rendered incapable of being the medium of mental exertion, the memory is enfeebled, and the unhappy ſleeper falls into a thoughtleſs lethargic ſtate, by which his ſenſibility is, in a great meaſure, deſtroyed.

Perſons troubled with hypochondriaſis and hyſterics do themſelves much injury by ſleeping too long, eſpecially in the morning, when the body is much weakened by its too long continuance in a heated and unwholeſome atmoſphere. To ſuch individuals, it is alſo dangerous to remain for a length of time in a ſtate of inactivity. Indeed, exceſs in ſleeping is detrimental to the muſcular powers of every perſon; to the phlegmatic, eſpecially, whoſe fluids will thus ſoon be univerſally corrupted;

corrupted; and ſanguine temperaments thereby acquire a ſuperabundance of blood. The melancholy, whoſe blood circulates ſlowly, muſt ſuffer inconveniences in their ſecretions and excretions by this indulgence; and we generally find, that long ſleepers are afflicted with coſtiveneſs and obſtructions. Early riſing, and timely going to bed, may alone render them more healthy and vigorous.

If it can be advantageous to any deſcription of perſons, to ſleep beyond the uſual portion of time, it is to the choleric. To ſleep immediately after ſupper, is apt to occaſion the night-mare, or a ſtagnation of the blood, which, by its preſſure, produces the ſenſation or idea of this troubleſome bed-fellow. It is principally the nervous, the debilitated, and thoſe of an impaired digeſtion, who are viſited by ſuch terrifying dreams.

The proper duration of ſleep, in youth and adults, is uſually ſettled at ſix or ſeven hours; in children and the aged, from eight to nine hours. Yet the individual deviations in the conſtitution of the body, and its various wants, ſcarcely admit of any accurate rules. The more bodily weakneſs we feel, the more we may indulge in ſleep, provided it be refreſhing. If people in a ſtate of health are perfectly cheerful in mind and body, when they firſt awake, this is the moſt certain criterion, that they have ſlept ſufficiently.

We

We ſhould, however, be on our guard, not to confound the natural wants of the body with a blameable cuſtom. For moſt perſons habitually ſleep too much, or remain longer in bed than they ought. The principal cauſe of this deſtructive cuſtom undoubtedly ariſes in infancy; when children are permitted to ſleep in very ſoft and heating beds, and encouraged to lie longer than is proper, from a miſtaken notion that they cannot ſleep too much. From this injudicious treatment, they cannot attain a ſolid texture of the body, and a foundation is laid for many ſubſequent diſeaſes. The rickets, ſo very common in many families, in the preſent age, often originate in ſuch indulgences, ſince the general relaxation of the body, and the tendency to profuſe perſpiration, is thus promoted in an extraordinary degree. At the age of puberty, this effeminacy of the body, and the inclination to ſleep, together with the pleaſant ſenſation, which a ſoft and warm bed affords in a waking ſtate, are certainly the firſt and moſt frequent cauſes of a vice, that might be effectually prevented by early riſing.

The cuſtom of ſleeping long, when continued to the ſtate of manhood, becomes ſo habitual that it cannot be relinquiſhed without great ſtruggles, and a firm reſolution. Thoſe, then, who are not poſſeſſed of this firmneſs, inſtead of attaining a ſtrong conſtitution, will acquire a phlegmatic, relaxed,

and cold temperament, which will render them irreſolute, and incapable of energetic efforts; and from which the mind, by degrees, becomes as indifferent towards every object, as the body is unfit for muſcular exertion.—Hence, to liſten to the voice of Nature, in this reſpect, will contribute more to our happineſs, than to ſhorten our repoſe by many of the uſual but violent means of excitement, when the body is in want of reſt.

To children, at a very early period of life, no limits of ſleep can be preſcribed; but, after the ſixth or ſeventh year of age, ſome regulations become neceſſary, to habituate them to a certain regularity. The juſt proportion of ſleep can be aſcertained only, by their more or leſs lively temperament, by their employments, exerciſe, and amuſements through the day, and according to the more or leſs healthy ſtate of their bodies. In purſuing this meaſure, however, we muſt not attempt to awaken children from their ſleep, in a violent or terrifying manner, which is frequently done, and is extremely pernicious.

In great diſquietude of mind, and after violent paſſions, ſleep is the more neceſſary, as theſe agitate and exhauſt the frame, more than the moſt fatiguing bodily labour. Hence, many perſons never ſleep ſo ſound, as when they are afflicted with grief and ſorrow. A fretful and peeviſh temper, as well as a fit of the hypochondriaſis, cannot be more effectually relieved, than by a ſhort ſleep.

Frequently,

Frequently, after a ſleep, of a few minutes only, we awake refreſhed, we can reflect on our difficulties with a calm mind, and again reconcile ourſelves to the troubles of life. In ſuch ſituations, though we ſhould not be able to ſleep, even a quiet poſture of the body, with the eyes cloſed, is of ſome advantage.

There is ſcarcely any misfortune ſo great, that it cannot be relieved or alleviated by ſleep; as, on the contrary, we ſhould inevitably ſink under its preſſure, if this beneficent balm did not ſupport us. Yet, frequently too, uneaſineſs of mind, by its continual ſtimulus on the *ſenſorium*, prevents all ſleep: hence the unquiet repoſe and even whole ſleepleſs nights of thoſe, whoſe heads are filled with cares or important ſchemes. As mental labours exhauſt our ſtrength more than thoſe of the body, literary men, who employ themſelves in long and profound reflections, require more ſleep than others. Though ſome perſons, whoſe body and mind are equally indolent, have a greater inclination to ſleep, than the lively and laborious, yet it is not ſo beneficial to them; ſince they are deſtitute of the eſſential requiſites to health, namely, activity and vigour.

The moſt healthy, and thoſe who lead the moſt regular lives, frequently have an uneaſy and very ſhort ſleep: they alſo require leſs reſt at one time that another. He who digeſts eaſily, ſtands leſs in need of ſleep than others. After taking aliment difficult

difficult of digeſtion, Nature herſelf invites to the enjoyment of reſt, and to ſleep in proportion to the time which is required for the concoction and aſſimilation of food.—Exceſſive evacuations, of whatever kind, as well as intoxication by ſtrong liquors, render additional ſleep neceſſary. In winter and ſummer, we require ſomewhat more time for ſleep than in ſpring and autumn; becauſe the vital ſpirits are leſs exhauſted in the latter ſeaſons, and the maſs of the blood circulates more uniformly, than in the cold of winter or heat of ſummer, when it is either too much retarded, or accelerated.

It is very improper to ſit up too late in the long winter evenings, whether at the deſk or the bottle, either of which is then more hurtful than in ſummer, becauſe the want of ſleep is greater. Thoſe who wiſh to ſpend the winter in good health, and uſeful labour, ſhould retire to bed at eight o'clock in the evening, and riſe at three or four o'clock in the morning. A winter morning, indeed, is not very charming, but the evening is *naturally* ſtill leſs ſo; and there is no doubt, that we can perform every kind of work, with more alacrity and ſucceſs, in the early part of the day than at night; and that our eyes would likewiſe be benefited by this regulation, after ſleep has enabled them to undertake any taſk in the morning; but they are fatigued at night, from the exertions of a whole day.

Every ſtimulus may interrupt ſleep, or at leaſt render it uneaſy, and often occaſion dreams, the cauſe of which is generally owing to an irritation in the ſtomach, or in the inteſtinal canal. Dreams are, as it were, a middle ſtate between ſleeping and waking, and generally indicate ſome defect in the body, unleſs they give repreſentations which originate in the occurrences of the preceding day.

An uneaſy ſleep, which is obvious from ſtarting up, or ſpeaking in it, and from a frequent change of the poſture in bed, is at no time a good ſymptom; it is as frequently a forerunner, as it is the effect of diſeaſe, and may be owing to the following cauſes:

1. Emotions of the mind and violent paſſions always diſorder the vital ſpirits;—at one time they increaſe, at another diminiſh, and ſometimes altogether check their influence, the conſequences of which extend to the whole circulation of the blood. Sorrows and cares produce a ſimilar effect. Hence the nocturnal couch is a very improper place to proſecute moral reſearches, or to recollect what we have done, ſpoken, and thought through the day.—To read intereſting letters, received late in the evening, uſually too occaſions an unquiet ſleep.

2. A bad ſtate of digeſtion, and eſpecially hard or corrupted food, on account of the connection of the brain with the ſtomach.

3. A re-

3. A repelled perſpiration, if we have not covered ourſelves conformably to the climate, ſeaſon, and weather.—In this caſe, a current of air is ſtill more hurtful than intenſe cold.

4. An apartment or bed to which we are not accuſtomed may alſo occaſion an uncomfortable ſleep, as travellers frequently experience. It is therefore an eſſential part of a good and healthful education, to accuſtom children to ſleep alternately upon different, and harder or ſofter couches, in various parts of the houſe, more or leſs temperate, which conſequently enables them to ſleep comfortably in a ſimple but clean bed, in whatever place or ſituation they may find it.

Debilitated perſons injure themſelves much by ſleeping during the day, againſt the order of Nature, and keeping awake the greater part of the night. Day-light is beſt adapted to active employments; and the gloom and ſtillneſs of the night to repoſe. The evening-air which we inhale ſoon after ſun-ſet, and night-air in general, which is vitiated in the country by the exhalations of plants, is very detrimental to the delicate. The forced watchfulneſs of thoſe who apply themſelves in the night to mental purſuits, is exceedingly prejudicial. A couple of hours ſleep before midnight is, according to old experience, more refreſhing than double the quantity after that period.

The queſtion, whether to *ſleep after dinner* be adviſable, muſt be decided by a variety of concurrent circumſtances; cuſtom, bodily conſtitution, age, climate, and the like.

In a weak and ſlow ſtate of digeſtion, after having taken hard or ſolid food, we may indulge ourſelves in a ſhort ſleep, rather than after a meal conſiſting of ſuch nouriſhment, as by its nature is eaſily concocted. But debilitated young people eſpecially ſhould not ſleep too much, though their weakneſs incline them to it; for the more they indulge in it, the greater will be their ſubſequent languor and relaxation.

Individuals of a vigorous and quick concoction may undertake gentle, but not violent exerciſe, immediately after meals, if they have eaten food that is eaſily digeſtible, and which requires little aſſiſtance, but that of the ſtomach and its fluids. And even ſuch perſons, if they have made uſe of proviſions difficult to be concocted, ought to remain quiet after dinner, and may occaſionally allow themſelves half an hour's ſleep, in order to ſupport digeſtion.

To reſt a little after dinner, is farther uſeful to dry and emaciated perſons, to the aged, and perſons of an iraſcible diſpoſition; to thoſe who have ſpent the preceding night uneaſily and ſleepleſs, or have been otherwiſe fatigued, in order to reſtore regularity in the inſenſible perſpiration; but in this

this caſe the body muſt be well covered, that it may not be expoſed to cold. Such as are fond of ſleeping at any time of the day, are uſually more indolent and heavy after it than before. A ſleep after dinner ought never to exceed one hour; and it is alſo much better ſitting than lying horizontally; for, in the latter caſe, we are more ſubject to fluctuations of the blood towards the head, and conſequently to head-ach.

Much depends upon the manner of lying in bed, and on the poſture to which we accuſtom ourſelves. To lie on the back, with the arms over the head, prevents the circulation of the blood to the arms, and is not unfrequently productive of ſerious conſequences. It is equally pernicious to lie in a crooked poſture, or with the breaſt very low and bent inwards; for the inteſtines are thereby compreſſed and obſtructed in their motions, and the blood cannot eaſily circulate downwards; whence may ariſe giddineſs and even apoplexy. Lying on the back is equally improper, and produces frightful dreams, together with many other inconveniences; the reverſe poſture is likewiſe noxious, as the ſtomach is thus violently oppreſſed, the free reſpiration much impeded, and the whole circulation of the fluids in the cheſt and abdomen wantonly prevented, to the great injury of health.

The moſt proper poſture, then, is on one ſide, with the body ſtraight, the limbs ſlightly

bent, (not ſtretched, becauſe they ought to reſt,) ſo that the body may lie ſomewhat higher than the legs. When the head is laid high, a ſhort ſleep is more refreſhing than a longer one when it is reclined too low. To healthy people it is a matter of no conſequence on which ſide they lie, and they may ſafely, in this reſpect, follow their own choice. Some dietetical obſervers allege, that it is better to lie in the evening on the right, and in the morning on the left ſide; that in the evening the food may more readily leave the ſtomach, and that afterwards this organ may be better warmed by the liver.

In the evening we ſhould eat light food only, and that ſparingly, wait for its digeſtion, and conſequently not lie down till two or three hours after ſupper. The mind ought to be kept quiet and cheerful, previous to going to reſt: we ſhould then, as much as poſſible, avoid gloomy thoughts, which require reflection and exertion. It is therefore a pernicious and dangerous practice to read ourſelves aſleep in bed. We would do much better, to exerciſe ourſelves a little before bed-time, by walking up and down the room.

Sleep without dreams, of whatever nature they may be, is more healthful than when attended with theſe fancies. Yet dreams of an agreeable kind promote the free circulation of the blood, the better concoction of food, and a due ſtate of perſpiration,

ſpiration. The contrary takes place in unpleaſant dreams, which excite anxiety, terror, grief, fear, and the like. In the latter caſe, they are of themſelves ſymptoms of irregularity in the ſyſtem, of an approaching diſorder, or of an improper poſture of the body. The functions of the body before mentioned are impeded by ſuch dreams; and the vital ſpirits, which ought to be reſtored and cheriſhed, are again diſſipated by violent emotions, inſomuch that the body and the mind continue unrefreſhed.

In order to preſerve the body warm, we make uſe of feather-beds and covers;—in ſummer, at leaſt, we ought to ſleep upon mattreſſes. It is a moſt eſſential requiſite to every perſon, who wiſhes to lead an agreeable, active, and uſeful life, to provide himſelf in time with a *proper* couch. To inſure all the advantages which may be derived from this quarter, nothing is better than a mattreſs filled with horſe-hair, or, if cheapneſs be an object, with dry moſs, at leaſt ſix inches thick. Several of ſuch mattreſſes may be placed one above another; the bolſter ought to be well ſtuffed and elaſtic; in winter with feathers, and during the ſummer with horſe-hair, more or leſs high, according to circumſtances, but always ſo that the head may lie conſiderably more elevated than the breaſt and the reſt of the body.

The cover ſhould never be tucked in too cloſely, that the acceſs of external air may not

be altogether excluded. If we make uſe of a bedſtead or a ſofa provided with ſteel ſprings, one of the mattreſſes above deſcribed, with a ſimilar bolſter, and the light cover of a double blanket, will be found ſufficient. Theſe beds are not only the moſt convenient for early riſers, but alſo the moſt conducive to health. The higher claſſes of ſociety in Ireland appear to be ſo well convinced of the ſalubrity of this mode of ſleeping, that their children, inſtead of being placed on enervating feather-beds, are habituated to ſleep upon bags filled with cut ſtraw, with blankets laid over the bags for ſoftneſs, and but ſlightly covered. I underſtand, that this praiſeworthy practice is every day becoming more general.

Indeed, there is no doubt that the muſcles and nerves are more braced by a proper elaſtic couch, than either by the moſt exquiſite down of Norway, or the moſt powerful tonic or ſtrengthening remedies taken internally. Yet theſe remarks are applicable only to the healthy ſtate of the body, when Nature requires no additional aid or precaution, in managing the organs of perſpiration.—Every bed ought to be ſo regulated, that it may ſlope down imperceptibly towards the feet; and if the particulars before ſtated be attended to, a healthy perſon will never ſleep too long; he will generally awake in ſix hours, feel himſelf refreſhed, riſe with cheerfulneſs, and

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be fit to undertake any exertions, either of body or mind.

What has been remarked in a former Chapter on Dreſs, and the advantages derived from covering the ſkin with animal wool, particularly in enervated and infirm people, is likewiſe applicable here, with reſpect to the dreſs, and the immediate covering of the ſkin, when in bed.—Though we uſually undreſs ourſelves as far as the ſhirt, partly for the ſake of cleanlineſs, and partly with the view of relieving the body from every preſſure and incumbrance, and of promoting a free circulation of the blood; yet we ſhould be cautious, leſt we materially hurt ourſelves by a ſudden expoſure to the air, when undreſſing, eſpecially after the hot and ſultry days of ſummer. A long and commodious night-gown of flannel would be a proper night-dreſs; eſpecially for thoſe who retire to their bed immediately after the bath, in order to preſerve a gentle degree of perſpiration.

The head ſhould not be covered with a warm flannel or worſted night-cap, as it were to make it a vapour bath; the thinneſt cotton or linen cap being fully ſufficient.—The conſequences reſulting from the pernicious practice of keeping the head too warm, have been explained on a former occaſion.—The ſhirt-collar ſhould be looſe, the wriſt-bands open, and if from a bad habit we have been accuſtomed to wear neck-cloths during ſleep, they ſhould be tied as looſely as poſſible.—Perſons who

who are naturally chilly in the lower extremities, or are liable to pains of the ſtomach and abdomen, would do well to ſleep in woollen ſtockings, but not in the ſame which they have worn through the day.

The *feather-beds*, in which we uſually ſleep, are certainly hurtful in many diſeaſes, ſome of which they may even produce. For they abſorb or imbibe the perſpired vapours thrown out of the body, without our being able to cleanſe them of theſe impurities, which are again re-abſorbed and re-conducted through the pores, to the great injury of health. For this reaſon, mattreſſes filled with horſe-hair, or moſs, are in every reſpect preferable. But, as many individuals have not ſufficient reſolution to uſe theſe, or are apprehenſive of the conſequences attending a ſudden change, they may at leaſt cauſe their feather-beds to be frequently and carefully ſhaken, aired in the ſun, and provided with a new covering. For the ſame reaſon, the bed ought not to be made immediately after riſing, as is generally practiſed; but the clothes ſhould be taken off, ſpread out, and not laid on the bed, until the time of going to reſt draws near. Farther, it is highly improper to ſleep in beds overloaded with clothes: they heat the blood more than is conſiſtent with health, and produce an immoderate and enervating perſpiration, which ſtill more weakens the organs already relaxed by ſleep.

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The cuſtom of ſleeping with the curtains drawn cloſe, is pernicious to health, becauſe the copious exhalations which then take place, cannot be properly diſſipated, and are conſequently again abſorbed. It is alſo imprudent to hide the head almoſt entirely under the bed-clothes. Perſons, who cannot ſleep without curtains, ſhould tuck up the lower ends of them, or place them over chairs, ſo that they may not lie cloſe to the bed, but admit a more free acceſs of air;—that ſide alone, which is next the wall, ought to be entirely covered with the curtain.

For ſimilar reaſons, the large common ſleeping-halls, or wards in public ſchools, as well as in hoſpitals, are extremely prejudicial to health; though they may be neceſſary evils, and cannot be eaſily remedied in the great ſeminaries of education. Neither the moſt healthy ſituation, with high, lofty, and ſpacious apartments; nor the daily practice of airing and cleaning them, are ſufficient to counteract the bad effects ariſing from this baneful cuſtom of crowding ſo many perſons together to breathe in a common and confined atmoſphere.

From theſe conſiderations, as well as in many other reſpects, the ſleeping-together in one bed, whether children, or adults, is at beſt a diſguſting and immoral cuſtom; beſides the poſitive diſadvantages it has with reſpect to health. Unleſs poverty or neceſſity render this cuſtom unavoid-

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able, it ought not to be practiſed, either among married or other perſons, and ſtill leſs among children. It has been remarked, even in the domeſtic œconomy of barbarous nations, that, in general, every individual has a ſeparate couch.

The old cuſtom of warming the bed alſo deſerves to be condemned; as it has a direct tendency to produce weakneſs and debility. This will be ſtill more dangerous, if it be done with a charcoal fire, which, by its poiſonous vapours, may prove very pernicious. A perſon who is accuſtomed to ſleep in a cold bed, will not feel much inconvenience in the ſevereſt cold; for, after being a ſhort time in bed, the natural warmth of the body will overcome it: as, on the contrary, thoſe who ſleep in a warmed bed, will be the more liable to feel cold, as ſoon as this artificial heat is diſſipated.

If it can be avoided, the bed-room ought not to be on the ground floor, nor towards the North. Many people prefer this ſituation in ſummer, on account of the cool air; they ſhould, however, conſider that, in ſuch an apartment, the morning as well as the night-air, is damp and unwholeſome. A bed-chamber ought to be expoſed to the early rays of the ſun, which awake man in a ſtate of health at a proper time, and enliven, ſtrengthen, and incite him to leave the bed, after having been refreſhed by reſt. It is, farther, more adviſable to endure a moderate

derate degree of heat, which may be modified at pleaſure, by various means, than to inhabit damp and low-ſituated apartments, from which the moiſture cannot be eaſily dried up in ſummer.

A ſpacious and lofty room ſhould always be choſen for a bed-chamber; for ſmall cloſets and, above all, concealed beds are extremely objectionable.—The windows ſhould never be left open at night; and as damp rooms are very prejudicial to health, we ought to pay particular attention, that the bed may not be placed near a damp wall. It is in every caſe preferable to place the bed ſo, that all the ſides of it ſtand free. This method of placing the bedſtead, in or about the middle of the room, has another advantage which, with timorous perſons, is perhaps of importance. It is well known, that a flaſh of lightning, if it accidentally enter through a window, will take its direction along the walls, and not touch any thing placed in the middle of a room.

Laſtly, no candle or ruſh-light ſhould be kept burning during the night in a bed-room; for it not only vitiates the air in a very conſiderable degree, but it diſturbs and prevents the reſt of thoſe whoſe ſleep is uneaſy, particularly the aged. In a dark apartment, ſleep generally comes without much invitation; as, on the other hand, the light

light of a candle ſtimulates the brain, conſequently the whole nervous ſyſtem; and the approaching comforter, whoſe arrival we ſo fondly wiſh, is thereby prevented, or eaſily interrupted, and baniſhed to calmer regions.

CHAP. VIII.

Of EVACUATIONS;—*their different ſpecies, as well as their peculiar nature inveſtigated; together with the neceſſary directions for their management, according to the different ſtates of the body.*

THE evacuations of the body, from its ſuperfluous, impure, and noxious particles, are no leſs neceſſary than its nouriſhment. The ſame power which changes and aſſimilates our food and drink, likewiſe effects the due and timely evacuation of what is ſecreted. It is an object of the firſt conſequence, that nothing remain in the body, which ought to be evacuated; and that nothing be ejected, which may be of uſe to its preſervation.

How many perſons do we find complaining of bad health, notwithſtanding every attention they pay to the air they breathe, to aliment, exerciſe, ſleep, &c.; while others enjoy a good ſtate of health, though totally careleſs with regard to theſe particulars. Indeed, much depends on a proper ſtate of the evacuations.—If theſe be diſordered, the moſt rigorous obſervance of dietetic rules is inſufficient to inſure our health; while, on the contrary, moſt of thoſe rules may be neglected,

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for ſome time, without any injurious conſequences, if the evacuations be duly attended to.

Nature removes not only the noxious matter, or ſuch as is in a ſtate of corruption, but likewiſe the uſeful fluids, if they become ſuperabundant; for inſtance, the milk, the ſemen, the blood. In ſuch caſes, therefore, theſe muſt be conſidered as objects of evacuation, equally natural and ſalutary.

By *ſtool*, the thick and feculent remains of aſſimilated food are evacuated; for every article of aliment contains more or leſs dregs, and their ſmalleſt particles only can be changed into the milky fluid, or chyle.

By *urine*, we eject the oily and ſaline particles ſecreted from the blood, in a diluted ſtate; which prevents theſe particles from injuring the external membranes, by their irritating acrimony.

By *inſenſible perſpiration*, which is carried on through the ſmalleſt orifices of the pores, the moſt ſubtile and noxious particles of the fluids are evaporated; which, if they were retained within the body, would lay the foundation of its total corruption.

Nature expels all crude and acrid ſubſtances by theſe three principal emunctories; and accordingly as they are diſordered, diſeaſes of different degrees of malignity and duration will neceſſarily enſue.—Nature alſo frequently relieves herſelf by more unuſual channels; ſuch are, the bleeding of

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the noſe in plethoric young men, the hemorrhoids with which perſons of a middle age are ſometimes troubled, the various ulcers common to thoſe whoſe fluids are in an impure ſtate, the excretions of ſaliva, and the expectorations of others, &c. By a premature ſuppreſſion of theſe troubleſome but ſalutary efforts of nature, great miſchief may be produced to the individual.

Many perſons perſpire much under the armpits, others in their hands or feet; others again are ſubject to eruptions in the face or other parts of the body: ſuch canals, however, if Nature be once accuſtomed to eject by them certain uſeleſs and hurtful particles, cannot be haſtily ſtopped, without occaſioning greater and more dangerous inconveniences;—cleanlineſs, in the ſtricteſt ſenſe of the word, is almoſt the only ſafe remedy to counteract their fatal effects.

Of Evacuations by Stool.

As the food and drink we conſume every day, neceſſarily depoſits uſeleſs matter, a daily opening by ſtool is extremely ſalutary; particularly to perſons ſubject to coſtiveneſs and the many diſagreeable conſequences thence ariſing. Of theſe I ſhall only enumerate frequent head-achs, difficult breathing, flatulency, eructations, and ſpaſms: hence peeviſhneſs of temper, general lethargy, and,

at length, hypochondriaſis;—the abdomen of ſuch perſons feels tumid; the circulation of the blood in the inteſtinal veſſels is retarded; and, conſequently, the general circulation interrupted. Theſe complaints, ſooner or later, certainly attend habitual coſtiveneſs; eſpecially if no other kind of evacuation, as that by urine, or inſenſible perſpiration, be in an uncommon degree increaſed.

In healthy individuals, the evacuation by ſtool uſually takes place once or twice a-day; and, according to the habits of the perſon, either in the morning or evening. Thoſe who are troubled with coſtiveneſs ſhould viſit the cuſtomary retreat, regularly every morning at a fixed hour, and thus endeavour to promote this neceſſary evacuation by proper efforts, though they may not, at the moment, feel much inclination; for it is well founded on experience, that Nature at length will be habituated, by perſeverance, to obſerve a certain regularity in this reſpect. The moſt proper time for theſe attempts is early in the morning, or late in the evening.

Whatever dietetic means may be adopted to promote ſtool ought to be employed either from three to four hours previous to the time we wiſh to ſucceed, or immediately before going to bed. If in the morning, we ought to riſe early, to take firſt a ſlice of bread with much freſh butter; then eat ſome boiled prunes; drink two or three cups of the decoction; and, if neceſſary, aſſiſt the operation

tion of the whole with a tea-ſpoonful or two of cream of tartar in treacle. Thus prepared, we ought to walk a little in the open air, or, if the weather be unfavourable, about the room; to rub the lower belly with the palm of the hand; and, when we ſit down, to retain the breath, by frequently, though moderately, inſpiring; and, laſtly, to change the poſture of the body, from a ſtraight to a crooked and ſidelong direction, till we ſucceed in the attempt.

Although theſe trials ſhould repeatedly fail, we muſt not be diſcouraged from perſevering in them; nor ought we, without abſolute neceſſity, to chooſe any other than the wonted hour to attain the end propoſed; ſo that this, at length, may become the only time, when Nature ſhall ſpontaneouſly aſſiſt our endeavours. During theſe practices, however, the choice of our diet is of the greateſt moment; as we can powerfully promote the deſired end, by living chiefly upon rye-bread, ſpinage, boiled fruit, particularly prunes, decoctions of currants, the ſweet and emollient vegetables, eſpecially the beet-root, and occaſionally ſalted meat; the laſt of which ſhould be aſſiſted with much drink, not of the ſpirituous kind, but rather of a mild and aperient nature, ſuch as ſweet table-beer, whey, infuſions of malt, apples, pears, and the like.

It deſerves to be remarked, that if every effort of this kind prove abortive, the voluntary exer-

tions in promoting ſtool ſhould not be carried to an extravagant degree; as by ſuch unnatural preſſure we may bring on ruptures, the burſting of veins in the rectum, or the piles. Hence it is more advifable to abſtain, for ſome time, from all crude and ſolid aliment, and to uſe only ſuch articles of food and drink as have been before pointed out. And if this alſo ſhould not be attended with the deſired effect, we may then have recourſe to the mild purgatives, ſuch as rhubarb, ſenna, cream of tartar, and the neutral ſalts.

While too much reſt, and a ſedentary life, prevent this ſpecies of daily evacuation, gentle exerciſe, accompanied with ſerenity of mind, almoſt certainly promote it. In many families, coſtiveneſs is an habitual and hereditary diſtemper. Sometimes too it originates from a weakneſs of the inteſtinal canal brought on by diſeaſes, but more frequently from the habitual uſe of certain ſubſtances of food and drink; for inſtance, the lean fleſh of quadrupeds, game, the leguminous vegetables, red Port wine, ſtrong and bitter malt liquor, and the like. Hence the pre-diſpoſing cauſe of the complaint ſhould always be attended to. If it ariſe from weakneſs, red wine, bitter ale, and other corroborants, are well calculated to effect a cure. In every inſtance, frequent exerciſe in the open air is extremely uſeful. Perſons living ſparingly on animal food, and who are otherwiſe temperate in their paſſions and deſires, are ſeldom deprived of

this natural benefit; and even though they ſhould be without it for two or three days together, they have little to apprehend from ſuch irregularity; for, as they do not wantonly overload their ſtomach, the accumulation of impurities cannot be conſiderable.

Where weakneſs and atony, or laxity of the inteſtines, are the cauſes of a coſtive habit, the external uſe of cold water, by affuſion on the lower belly, or merely waſhing it with that fluid, is frequently preferable to all other dietetic remedies. This is one of the moſt ſimple means of preventing painful coſtiveneſs; though it ought not to be applied indiſcriminately, and leaſt of all in thoſe caſes where the uſe of the cold bath is improper and hurtful.—If debility and relaxation of the inteſtinal canal be the cauſe of coſtiveneſs, clyſters of cold water alone are generally productive of ſingular benefit; yet theſe alſo cannot be uſed without many exceptions—not, for inſtance, by females, during the menſes, by perſons afflicted with the piles, or having weak lungs, nor in certain kinds of colics and ſpaſms.

The diſcharges by ſtool ought to be neither in too liquid nor too dry a ſtate. Strong labour, heating drinks, and long faſting, render them diſagreeably hard, even in the healthieſt individuals; from the feces remaining too long in the region of the lacteals, ſo that the nutritious or milky part of the concocted maſs is exhauſted to

the laſt drop, and there remains behind no other but dry, excrementitious matter. Theſe ſtools, therefore, are frequently a ſymptom of good digeſtion, ſuch as attends ſound conſtitutions in general.

Too dry excrements, in the form of balls, eſpecially in delicate individuals, occaſion head-ach, inflammation of the eyes, febrile complaints, hemorrhoids, ruptures, paralytic affections, and frequently produce flatulency and ſpaſms, in perſons ſubject to hyſterics and hypochondriaſis: nay, even the ſuppreſſion of flatulency is extremely dangerous. Thoſe who are apt to delay going to ſtool, expoſe themſelves to many ſerious inconveniences. When this ſenſation is loſt, it does not uſually return for ſome time. The feces collected in the inteſtinal canal powerfully diſtend it, give riſe to the blind hemorrhoids, and ſometimes even to a falling down of the anus; the excrements become dry, and their re-abſorbed fluid parts irritate and vitiate the blood, and produce many obſtinate diſtempers. If a perſon has been coſtive for ſeveral days, the inclination to go to ſtool is ſometimes loſt, until reſtored by artificial means.

Looſe and too frequent ſtools are common with thoſe, who take more aliment than their ſtomach can digeſt; for the food, from the ſtimulus occaſioned by its corruption in the alimentary canal, is too ſoon ejected, without being duly aſſimilated. Hence debilitated perſons, who eat immoderately,

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generally are thinner and leſs muſcular than others, who obſerve a regular and temperate diet. The ſtools are a tolerable criterion of the quantity and quality of the food we have taken, and whether the digeſtive powers be adequate to its concoction. For, in weak inteſtines, the unaſſimilated matter of food turns acrid, and contributes nothing to the nouriſhment of the body. Thus it happens, that debilitated individuals, and ſuch as are of a phlegmatic habit, continue lean and emaciated, whatever quantity of food they conſume. For this reaſon, they ought to live principally on milk, eggs, broths, tender meat, emollient vegetables; and to eat only when they feel a true appetite, and after moderate exerciſe.—It is not the man who takes comparatively little food, that can be called temperate; but rather that perſon who makes uſe of no more aliment, than he is able to digeſt. Thin and copious ſtools, therefore, are a certain proof of indigeſtion.

Some perſons are accuſtomed to go to ſtool more than once a-day, others only every ſecond day, and yet enjoy a good ſtate of health. It is, however, more deſirable and wholeſome to have a regular evacuation every day; and children eſpecially ought to have two or three diſcharges daily. Aged perſons, in general, have but one ſtool in a day. The air we breathe, makes, in this reſpect, a remarkable difference. The more we perſpire in ſummer, the fewer are the evacuations; and, on

the contrary, moderate exercise is productive of more regular excretions, than that which is too violent. Robust and muscular individuals perspire more than the weak and enervated; hence the evacuations of the former, by other emunctories, are more limited; while the latter, whose fluids are not duly determined to the surface of the body, have more frequent openings by stool.

Obstructions and costiveness, of which many persons now complain, are owing to a variety of causes, but chiefly to our luxurious mode of living, and to the custom of making too many meals through the day. The time requisite to the digestion of a meal cannot be well ascertained, as some stomachs concoct quickly, and others slowly; and there is a remarkable difference in the degrees of digestibility, among the various species of food; the nature and properties of which have been already pointed out in the fifth Chapter. But this may serve as a general rule, that we ought never to take a new supply of food, till the preceding meal be digested.

Some moderate livers, after having deviated from their usual temperance, do not feel any inconvenience till after two or three days, when they are troubled with copious evacuations, head-ach, uneasiness and dejection of mind. Such excesses are frequently accompanied with serious consequences, of which costiveness is only the forerunner.

runner. Neither the emetics, or laxatives, to which the glutton has recourſe, nor the faſhionable ſtimulants and ſtrengthening bitters, can prevent or remedy the ultimate effects of ſuch brutal habits. The emetics and purgatives inevitably weaken the firſt paſſages, and lay the foundation of conſtant obſtipations; while the ſtimulants deprive the inteſtines ſtill more of the neceſſary humours, and render the evil much greater. The moſt proper means of preventing theſe hurtful conſequences, are the following:

1. A due degree of bodily exerciſe, by which the muſcular power will be invigorated, the nervous ſyſtem ſtrengthened, and the circulation of the blood promoted.

2. We ought to take a proportionate quantity of drink to our victuals; a circumſtance not always ſufficiently attended to, by perſons of a ſedentary life. Drink dilutes the food, and ſoftens the bowels. A weak, well-fermented, and well-hopped beer, is an excellent beverage: ſo is water with the addition of a little wine. Warm diluents, on the contrary, have a manifeſt tendency to increaſe obſtructions, by the relaxation they produce in the inteſtines.

3. Let us chooſe the quality of our food, according to our conſtitutional wants. Thoſe who cannot digeſt well, ought to avoid all thick, mealy diſhes, paſtry, onions, warm and new bread, and ſuch as is not thoroughly baked. Coſtive perſons frequently

frequently complain of an acid generated in their ſtomach; while others, on account of this acid, are ſubject to looſe and very frequent ſtools. Vinegar and tart wines are but rarely the cauſe of this acidity; never, indeed, except when they diſagree with the ſtomach. New wines, on the contrary, as well as vegetables of an aceſcent kind, and particularly long kept and roaſted fat meat, have the ſtrongeſt tendency to produce acidity, the heart-burn, and, at length, obſtructions in ſome conſtitutions, and diarrhœas in others. The proper ſpecies of food, in ſuch caſes, are herbs, carrots, ſugar-peas, french beans, parſley-roots, the ſcorcenera, artichokes, horſe-radiſh, muſtard-leaves, and ſimilar plants, boiled ſoft in broth, ſufficiently ſalted, and without the addition of fat, or butter. Beſides theſe, only a ſmall quantity of meat ought to be uſed, and this ſhould be tender; but no fat fiſh, nor game kept too long, for the purpoſe of rendering it mellow; and laſtly, all kinds of fruit ought to be eaten boiled rather than raw.

4. We ſhould not too much indulge in ſleep, which, particularly after dinner, is hurtful to perſons whoſe digeſtion is languid, and whoſe evacuations are preternaturally ſlow. During ſleep, all the motions in the ſyſtem are performed with leſs vigour, and more tardily: and, in this reſpect, to keep awake may be conſidered as a ſpecies of exerciſe; as the nerves, in that ſtate,

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are more active, and the circulation of the blood is carried on with greater energy.—Evacuations by ſtool can be ſuppreſſed, by ſleeping an improper length of time, for inſtance, ten or twelve hours inſtead of ſeven or eight; and we may prevent theſe ſalutary diſcharges, by ſitting down to any inactive employment, previous to the uſual inclination to retire to ſtool.

If it be our wiſh to preſerve health, we ought not only to guard againſt coſtiveneſs, but likewiſe to prevent, by all proper means, too frequent excretions. Copious evacuations of this kind exſiccate the body, and deprive it of that ſtrength, which is neceſſary to ſupport its exertions. Perſons ſubject to diarrhœa, cannot be too cautious in the uſe of watery, ſaline, and eaſily fermentable articles of food and drink, and in avoiding violent fits of anger and other paſſions. On the contrary, they will promote their health, by uſing proviſions of a drying nature, drinking a well-fermented, bitter beer or ale, or, if they can afford it, good old wine:—all of which have the beneficial tendency to promote perſpiration, and thus prevent ſuperfluous humidity in the body.

If too copious evacuations proceed from a relaxed ſtate of the inteſtines, daily exerciſe is of conſiderable efficacy; for the fibres of the whole body are thereby invigorated; and, if irritating or peccant humours ſhould be the cauſe of the complaint, nothing is better calculated to expel them

them by perſpiration, urine, or ſtool, than ſpirited and perſevering muſcular motion, until the body be tolerably fatigued. But, in this caſe, we muſt not attempt to remove or ſuppreſs this material ſtimulus by aſtringent remedies; for, inſtead of evacuating the noxious matter by the proper emunctories, ſuch medicines will neceſſarily produce dangerous, and often fatal diſeaſes.

It would be a deſirable object, in houſes which are not provided with water-cloſets, that every individual were furniſhed with his own night-chair; as moſt of the common places of retirement are literally ventilators, where ſome parts of the body are expoſed to a current of air, which is frequently the cauſe of diſorders, particularly in perſons ſubject to colds, and all other complaints originating from ſuppreſſed perſpiration; accidents, which may injure ſtill more thoſe, whoſe lungs are unſound. Men who are troubled with the piles, and, above all, women during the menſes, ought to be very cautious in reſorting to ſuch places.—In the uſual privies, there generally prevails in ſummer a peſtilential fetor; ſo that it becomes almoſt impoſſible to wait for the proper evacuation, both becauſe of the diſagreeable ſmell, and the danger of being infected with diſeaſe.

After every ſtool, there is a ſlight bearing down of the anus; a circumſtance which renders ſome precaution in the cleaning of it neceſſary. The ſubſtance uſed for that purpoſe ought to be previouſly

viously examined, whether its ſurface contain any rough and looſe particles, which would be immediately communicated to the anus, and might gradually produce the blind hemorrhoids.—Laſtly, all unnatural forcing and ſtraining of coſtive perſons, is not only uſeleſs, but may alſo be attended with dangerous conſequences. It is, therefore, more adviſable to uſe all proper means of keeping, if poſſible, this important excretion in due regularity; and, to attain that deſirable end, it is further neceſſary to abandon all ſtrait garments, eſpecially laced ſtays, and tight waiſtbands.

Of Urine.

In a ſtate of health, this diſcharge takes place oftener than once in a day. The urine of thoſe who live moderately, and take proper exerciſe, if examined in the morning after riſing, and after having ſpent a quiet and comfortable night, is thin, clear, of a ſtraw colour or inclining to yellow, with a white, looſe, and uniform ſediment riſing in the middle; it makes no foam, but what immediately vaniſhes, and has no unuſually diſagreeable ſmell. If it correſpond to this deſcription, it is a ſymptom of good digeſtion, and of the body being free from impurities. The quantity of this evacuation, in healthy perſons, depends on their conſtitution, the ſeaſon, and the weather. It is leſs in warm than in cold climates, on account of the increaſed perſpiration.

perſpiration. In winter, we generally eject more urine than in ſummer; and this nearly in proportion to the degree of inſenſible exudation. In ſpring and autumn, it is probably voided in an equal proportion.

We may judge (not prognoſticate) reſpecting the ſtate of the body, from the appearance of the urine in the morning only; for, during the day, this would be a fallacious criterion, from the nature and quantity of food and drink we conſume. The ancients were extremely fond of predicting the different ſtates of health and diſeaſe in the human body, from the appearances obſerved in the urine. Among the moderns, who are better acquainted with the animal œconomy, theſe appearances are not implicitly attended to, as they have frequently been found to miſlead the obſerver; yet, the early morning urine, if allowed to ſtand for an hour or two, exhibits ſome phenomena, which render it an object worthy the attention of the medical practitioner. Thus, a thin, pale urine, which is voided by the hypochondriac, the hyſteric, and perſons afflicted with ſpaſms in the abdomen, indicates great weakneſs, or the approach of cramps, originating from a contraction of the ſmaller ſecretory organs. It is likewiſe of a whitiſh colour, after taking much weak drink. In debilitated individuals, the urine is foamy, and this froth remains on the top for a conſiderable time; becauſe it abounds in tough and viſcid particles. The health

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of ſuch perſons, however promiſing in appearance, is by no means permanently eſtabliſhed.

The urine is of a red colour, after too little drink, or after drinking ſpirituous liquors, after violent exerciſe, profuſe perſpiration, and after having ſpent a reſtleſs night. It yields a ſediment reſembling brick-duſt, when the ſtomach is impure, and the tongue white with a yellowiſh taint, and covered with viſcous matter. According to the higher or paler colour of the urine, in an ordinary ſtate of health, the body may be conſidered as being more or leſs vigorous. If, after long ſtanding, no ſediment be depoſited in it, great weakneſs is indicated: yet the concluſion is more favourable, although the urine be thick and ſandy, if a cloud be obſerved ſwimming in the middle.

Indeed it is leſs dangerous to ſuppreſs the evacuations by ſtool, than thoſe by urine; for, if this remain too long in the bladder, it becomes acrid and corroſive. If the inclination to make water is accompanied with a diſcharge of a few drops only, it is called a *ſtrangury*; if the difficulty of voiding it is attended with pain, a *dyſuria*; and, if a total ſuppreſſion of it takes place, it is then called an *iſchuria*. Theſe diſeaſes are frequently the effects of ſome malt-liquors, or of certain articles of food, particularly vegetables containing much acidity. In the beginning of ſuch painful complaints,

complaints, relief can be given by fomenting the patient, about the genitals, with flannel-cloths, as hot as he can bear them, by keeping him ſufficiently warm, and allowing him plenty of warm, diluent drink.

Although the quantity of the urine to be voided through the day cannot be accurately aſcertained, yet this evacuation ought always to be proportionate to the drink we have taken, and to the greater or leſs degree of perſpiration. If we perceive a deficiency in this diſcharge, we ought to take moderate exerciſe, to drink light, thin, and acidulated diluents, and to eat a variety of ſuch herbs and fruits, as poſſeſs diuretic virtues: of this nature are, parſley, aſparagus, celery, juniper-berries, ſtrawberries, cherries, and the like. We ſhould be careful, not to retain the urine too long; a practice which would occaſion relaxation and palſy of the bladder, and which might at length produce the gravel or ſtone.

Many maladies may ariſe from voiding too ſmall a quantity of urine; hence the neceſſity of attending to this excretion, from which we may frequently diſcover the cauſe of the diſeaſe. The relative ſtate of vigour or debility in the individual, the mode of life, more or leſs drink, dry or damp weather—all produce a difference in the quantity of this evacuation. Robuſt perſons eject leſs urine than the debilitated; a copious emiſſion of it

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is always a ſymptom of a relaxed body, which is not poſſeſſed of ſufficient energy to expel its noxious particles by tranſpiration through the cutaneous veſſels.

The more exerciſe we take, the leſs we loſe by the urinary paſſages; ſince they are drained by the pores. Cold and moiſt air checks perſpiration, but promotes the excretion by urine. When this canal is ſuppreſſed, the bladder ſometimes becomes ſo much diſtended that it burſts, as may eaſily happen to parturient women; and hence ariſe incurable *fiſtulæ*; or, if the paſſages be obſtructed, the urine retreats into the cellular texture of the whole body, and penetrates even into the cranium. Women, however, are able to retain it longer than men.—Too copious an evacuation of urine conſtitutes a peculiar diſeaſe, known by the name of *diabetes*, which not unfrequently proves fatal to the ſufferer, after he has diſcharged ſeveral gallons a day, for a conſiderable length of time.

Among the rules and cautions for the proper management of this evacuation, it deſerves to be remarked, that it is hurtful to make water too often, or before a proper quantity of it be accumulated in the bladder. By ſuch practice, this veſſel gradually contracts into a narrower compaſs than is aſſigned by nature, and cannot again be eaſily diſtended. Too long a retention of urine, on the contrary, preternaturally enlarges the bladder, weakens its muſcular power, and may, with the

advancement of age, occaſion *iſchuria* or a total ſuppreſſion; beſides which it promotes the depoſition of mucus and ſand in the bladder, and inevitably leads to that troubleſome and painful complaint, the ſtone.

Of inſenſible Perſpiration.

Of all the natural evacuations, none is ſo important and extenſive, none is carried on with leſs interruption, and none frees the body from ſo many impurities, particularly from acrid and thin humours, as inſenſible perſpiration. The health of man chiefly depends on the proper ſtate of this function: the irregularities occurring in it, occaſionally produce peeviſhneſs of temper, head-ach, diſturbed ſleep, heavineſs in the limbs, &c.; and, on the contrary, we find ourſelves moſt lively and vigorous, when it is duly and uniformly performed.

A perſon of a middle ſtature, and in perfect health, perſpires, according to the calculation of ſome, from three to four pounds weight, according to others, about five pounds, within twenty-four hours. The exudation by the pores is moſt eſſential during the night; the noxious particles only being then ſeparated; which, on account of the diſturbances we are expoſed to through the day, cannot be ſo well effected, as the circulation of the blood is thereby interrupted, while at night

it is comparatively more calm and regular;—beſides which, the nocturnal perſpiration is more copious, from the greater uniformity of the ſurrounding atmoſphere.

Moſt of the febrile diſeaſes ariſe from a ſuppreſſed perſpiration; as the exuded matter is of an acrid and irritating nature. To tranſpire beneficially, means, that the impure and pernicious particles only be ejected, in which caſe the perſpiration is inviſible and imperceptible. This is ſo eſſential a requiſite, that without it the health of the individual cannot long ſubſiſt. The reciprocal connection between the functions of the ſtomach, and of perſpiration, is ſo obvious, that if the latter be checked, the former is immediately affected; and the reverſe takes place, if the ſtomach be diſordered.

The more vigorouſly a perſon perſpires, (it ought to be well remarked, that the queſtion here is not of *ſweating*) the more active are the powers of the body, in the regular concoction of the alimentary juices; and the more certain it is, that no fluids will ſuperabound: for the fluids, though refined and ſubtile, far exceed in weight the more compact and ſolid parts of the ſyſtem, ſo that they would oppreſs the machine like a heavy burden, if not evacuated by the pores of the ſkin. Moſt individuals, however, are accuſtomed to direct their attention only to evacuations of a more groſs nature, or ſuch as are more obvious to the ſenſes.

But *inſenſible* perſpiration is of greater moment than all the other excretions; and by paying due regard to that function, if it ſhould be accidentally diſturbed, we may frequently diſcover the lurking cauſe of a diſtemper, and remove it, before it has materially injured the body.

Yet, even in the moſt healthy, this perſpiration is not at all times, nor at all hours of the day, equally active. It is weaker after a plentiful meal, but as ſoon is the food is digeſted, we again perſpire with increaſed energy; for the new chyle being changed into blood, imparts additional efficacy to the vital powers, as well as to the circulation of the blood itſelf. As we perſpire conſiderably more in ſummer than in winter, our mode of life, with reſpect to ſleep, as well as to food and drink, ought to be regulated accordingly. We know from accurate obſervation, that if we retire to bed immediately after ſupper, the proceſs of perſpiration is checked in a remarkable degree: we alſo know, that it is highly conducive to health, that this important function of the body be preſerved in the moſt uniform ſtate; hence it neceſſarily follows, that, after ſupper, we ought to ſit up at leaſt two hours; and to afford this benefit both to the organs of digeſtion and perſpiration, our ſuppers ſhould not be delayed to the late hours now ſo abſurdly in faſhion.

According to the experiments made by different inquirers into the nature of inſenſible perſpiration, this

this proceſs is moſt forcibly affected, and ſometimes totally ſuppreſſed, by the following circumſtances:

1. By violent pain, which in a remarkable degree conſumes the fluids of the body, or propels them to other parts.

2. By obſtructions of the cutaneous veſſels, which are frequently occaſioned by the uſe of ſalves, ointments, and coſmetics.

3. By ſevere colds, particularly thoſe contracted at night, and during ſleep.

4. When Nature is employed with other objects. Thus perſpiration is weaker during the time of concoction, particularly after uſing food difficult of digeſtion. This is likewiſe the caſe, when Nature endeavours to promote any other ſpecies of evacuation, which more engages the attention of the ſenſes; for inſtance, vomiting, diarrhœas, conſiderable hemorrhages, and the like: farther, when the efforts of Nature are too weak; hence the aged, the debilitated, and poor perſons, unable to ſupply the wants of the body, or to pay due attention to cleanlineſs, perſpire leſs than others: laſtly, the ſame muſt happen to individuals of a ſedentary life, who neglect the neceſſary exerciſe of the body; and thoſe likewiſe who wear too tight garments, and improper ligatures about the joints.

Perſpiration, on the contrary, is promoted:

1. By ſtretching or expanding the limbs; as, by ſuch means, the lungs and muſcles acquire an additional impulſe, and the fluids circulating too ſlowly in the ſmaller veſſels, are propelled to the larger veins and arteries, and thus forwarded to the heart; ſo that this principal muſcle is then impelled to extend and contract its ventricles with greater force, and conſequently to quicken the whole circulation of the blood.

2. By the lukewarm bath, which is well calculated to ſoften the ſkin, and thus to open the pores for a better perſpiration.

3. By moderate bodily exerciſe.

4. By mild ſudorific remedies;—and for this reaſon it is extremely proper, in caſe of a recent cold, to drink two or three cups of tea, eſpecially previous to going to bed.

If perſpirable matter collect in drops, it *ſhould* then be called *Sweat*, and is no longer a natural and neceſſary evacuation; on the contrary, we find very healthful and robuſt perſons who ſeldom or never ſweat. By means of this exudation, both noxious and uſeful particles are at the ſame time ejected from the ſurface; the body is enfeebled; the blood is rendered impure; and the ſecretion of bad humours is prevented by every violent effort of the cutaneous veſſels.

If ſweating be carried to excefs, it is extremely noxious, and may even be productive of con-

ſumption.

ſumption. By inſenſible perſpiration, on the contrary, the ſuperfluous particles only are expelled; becauſe the circulation of the fluids is ſlower, and more calm and uniform. This important purification of the blood ought never to be checked: if, therefore, we wiſh to take a bracing exerciſe, it ſhould by no means be continued, till profuſe perſpiration take place.

Cold then only checks perſpiration, when it occaſions an unuſual ſtimulus on the ſkin, and if we too ſuddenly remove from a warm to a cold atmoſphere. Hence the neceſſity of accuſtoming ourſelves, from early youth, to the viciſſitudes of heat, and cold, of walking every day in the open air, and of waſhing the whole body, at leaſt once a week, with lukewarm, or ſtill better, with cold water. By this practice the pores are braced, and inured to undergo the different changes of the weather and ſeaſons, without ſuffering (as moſt people now do, upon the ſlighteſt occaſion) by ſevere cold and catarrhs.

It is never too late to begin this ſtrengthening proceſs, by frequently waſhing and rubbing the whole ſurface of the body with cold water; for, if cautiouſly managed at firſt, it cannot fail to invigorate young perſons and adults, as well as the aged. — To ſleep on feather-beds occaſions a conſtant vapour-bath at night, which again deſtroys the beneficial acquiſitions of the day. — To remove from a cold temperature to a ſtill

colder one, is not nearly ſo prejudicial, as to exchange ſuddenly the air of a warm room, for that of a moiſt and cold atmoſphere. This accounts for the frequent colds caught in ſummer, even by going from the burning rays of the ſun to the cooling ſhade; and hence too the firſt cold of autumn is moſt ſenſibly felt, becauſe we are then unaccuſtomed to that impreſſion.

Much alſo, as has been before obſerved, depends on the nature and properties of our food and drink, in reſpect to the ſtate of inſenſible perſpiration. The ſubtile and rarefied fluids only, not thoſe of a coarſe and oily conſiſtence, can pervade the ſkin. Too many oleaginous, viſcous, and crude articles of nouriſhment, ſuch as fat meat, paſtry, boiled mealy diſhes, ſmoked hams, ſauſages, &c. have a ſtrong tendency to obſtruct the free perſpiration of the body, and conſequently to affect the ſerenity of the mind.

All the depreſſing paſſions and emotions are a powerful check to inſenſible perſpiration; while, on the contrary, thoſe of an exhilarating nature may promote and increaſe it to ſuch a degree, as ſometimes to prove the pre-diſpoſing, though diſtant cauſe of conſumptions. Moderate daily exerciſe is eminently calculated to ſupport this function, and to ſtrengthen the whole body. Cleanlineſs produces a ſimilar effect; for ſome impurities continually ſettle on the ſurface of the body; and theſe, if not removed in time, clog the pores,

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and are ſo detrimental to health, that they may occaſion many obſtinate diſtempers, which might be eaſily prevented, or at leaſt checked in their progreſs, by a proper and conſtant attention to the ſkin.

Too violent a perſpiration indicates great debility of the body, or a laxity of the cutaneous veſſels, which may frequently be removed by cold bathing or waſhing. When perſons are troubled with unuſual night-ſweats, they may receive benefit (if it be not a ſymptom of hectic fever) by taking, immediately before going to bed, two or three drachms of cream of tartar, in either beer or water. But if this ſimple remedy, after repeated trials, ſhould prove ineffectual, a profeſſional man ought to be conſulted; as long-continued night-ſweats may in the end produce great weakneſs, and even conſumption.

In moſt of the common colds, the popular ſtimulant remedies, ſuch as heating liquors, and particularly ſudorifics, are ill calculated to relieve the complaint. If the patient, at the ſame time, be troubled with pain in the bowels, head-ach, a foul tongue, &c. a gentle laxative will be of greater ſervice than the diaphoretics. But if the ſtomach be peculiarly affected, if the tongue be clean and the appetite good; two or three cups of warm diluent drink, a tepid bath of the legs, a moderately warm room and dreſs, gentle exerciſe, and friction of the ſkin with warm cloths, are the moſt

moſt proper and generally effectual means of relief.

As the retention of uſeleſs and ſuperfluous matter is hurtful, it is not leſs detrimental to health, if ſubſtances not ready to be evacuated are ejected from the body.—Of this kind are bleedings from the noſe, the mouth, and the veſſels of the anus: though theſe are not natural evacuations, yet they may occaſionally be beneficial, as Nature ſometimes makes an effort to expel noxious matter in an unuſual manner. But theſe parts or fluids ejected as pernicious, ſtrictly ſpeaking, ought not to exiſt in the body; and though the evacuation of them be beneficial, it is a ſymptom of diſeaſe. If, therefore, ſuch preternatural diſcharges take place too violently or frequently, they ought to be checked with judgment and circumſpection; and we ſhould endeavour to lead (but not to force) Nature to a more ſalutary canal, than that ſhe has choſen, either by accident or wanton compulſion.

Of the Saliva.

The ſaliva ſhould not be confounded with mucus, or ſlime; the former is a fluid, not intended by Nature to be evacuated, as it ſerves the important purpoſe of mixing and preparing the food for the ſtomach; hence it ought not to be unneceſſarily waſted by frequent ſpitting; the latter, mucus, may

may be ſafely thrown out as burdenſome and offenſive. The abſurd cuſtom of ſmoking tobacco is extremely prejudicial, as it weakens the organs of digeſtion, deprives the body of many uſeful fluids, and has a direct tendency to emaciation, particularly in young perſons, and thoſe of lean and dry fibres. To theſe it is the more detrimental, that it promotes not only the ſpitting of ſaliva, but likewiſe other evacuations. This plant is poſſeſſed of narcotic properties, by which it produces in thoſe who firſt begin to ſmoke it, giddineſs, cold ſweats, vomiting, purging, and, from its ſtimulus on the ſalival glands, a copious flow of the ſaliva.

Frequent and much ſmoking makes the teeth yellow and black; the clay-pipes are apt to canker the teeth to ſuch a degree as to infect the breath, and produce putrid ulcers in the gums. Delicate perſons eſpecially ſuffer from this nauſeous habit; as it has a direct tendency, not only to exſiccate their bodies, by contaminating the fluids, rendering them acrid, and vitiating the digeſtion and aſſimilation of food, but likewiſe to impair the mental faculties. Theſe effects, however, are leſs to be apprehended from ſmoking tobacco, if it has become habitual, and is not carried to exceſs. To perſons of a middle age, or thoſe of full growth, particularly the corpulent, the phlegmatic, and ſuch as are ſubject to catarrhal complaints, it may occaſionally be of ſervice, if uſed with

with moderation, eſpecially in damp, cold, and hazy weather. Yet ſuch perſons ought never to ſmoke immediately before or after a meal, as the ſaliva is materially requiſite to aſſiſt the concoction of food, which is not accompliſhed till about three or four hours after a meal;—they ſhould ſmoke ſlowly; frequently drink ſmall draughts of beer, ale, tea, or any other diluent liquors, but neither ſpirits nor wine; and, laſtly, they ſhould uſe a clean pipe with a long tube; for the oil of tobacco, ſettling on the ſides of the pipe, is one of the moſt acrimonious and hurtful ſubſtances, and may thus be accidentally abſorbed, and mixed with the fluids of the body.

Of the Mucus of the Noſe.

The ſecretion of this humour is intended by Nature to protect the olfactory nerves: hence every artificial mean of increaſing that ſecretion is prepoſterous, unleſs required by ſome particular indiſpoſition of the body. The remarks, then, made with reſpect to the ſaliva and ſmoking, are alſo applicable to the mucus of the noſe, and the habit of taking ſnuff. The queſtion here is not of that catarrhal ſecretion of viſcid ſlime, which is ejected as uſeleſs. Snuff ſtimulates the mucous membrane of the noſe, and, ſympathetically, the whole body; by which the mental powers are

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in a ſlight degree affected. If uſed as a medicine * only, and on occaſions that require ſuch a ſtimulus, it may be productive of ſome advantage; but a liquid ſternutatory deſerves every preference to a powder, which, though at firſt ſtimulating and occaſioning a flow of viſcous matter, in the end always obſtructs the noſtrils. And if this ſtimulus be too violent, it may bring on ſo profuſe a diſcharge of matter from the delicate membrane lining the noſe, as to relax and corrode it, and to

* By the perſuaſion of ſome friends, who were anxious to ſee the farcical performance of an empiric, whoſe name does not deſerve to be recorded here, I this day (September 25th, 1798) joined a party, to witneſs the pretended effects of a certain *ſnuff-powder*, together with what he calls his *acromatic belts*, which are at beſt but a clumſy imitation of *Meſſmer's Animal Magnetiſm* (*vid.* page 147 and foll.); and, as ſuch, have not even the merit of originality.—The medicated ſnuff appears to be an aſſiſtant mean contrived by this *Charlatan*, to ſtupify the heads of his patients, who were generally of the loweſt claſs. The German adventurer ſtood in need of no external remedies to affect the nerves of the *Pariſian* fanatics, while our *London* Mountebank cannot, without ſome additional ſtimulus, operate on *Engliſh* brains.—All this is characteriſtic of the vile and deſpicable plans adopted by quacks; but, to hear an ignorant pretender to medicine deſcanting on the virtues exiſting in his acromatic belts; maintaining that an univerſal magnetic ſpirit pervades them; that this ſpirit alone cures all the diſeaſes incident to the human frame, even broken limbs and exfoliations of bones; and, laſtly, to permit an audacious impoſtor to impeach the honeſty of the whole Faculty, before a deluded audience—ſuch outrage loudly calls for the interference of the civil magiſtrate.

produce

produce a *polypus*, or a concretion of clotted blood in the noſtrils.

In ſeveral diſeaſes of the head, eyes, and ears, however, the taking of ſnuff may occaſionally ſupply the place of an artificial iſſue; though an extravagant uſe of it will moſt certainly produce a contrary effect; namely, accumulation of matter in the head, bleeding of the noſe, and other complaints. Farther, it would be extremely injudicious to adviſe the uſe of ſnuff to perſons of a phthiſical conſtitution, or thoſe afflicted with internal ulcers, and ſubject to ſpitting of blood; as, by the violent ſneezing it at firſt occaſions, ſuch individuals might expoſe themſelves to imminent danger. —Public ſpeakers of every kind, as well as teachers of languages, and, in ſhort, all thoſe to whom a clear and diſtinct articulation is of conſequence, ought to avoid this habit, which, when carried to exceſs, is, in this reſpect, extremely prejudicial. Thoſe, too, who have a regard for cleanlineſs will not accuſtom themſelves to this hurtful practice. In ſhort, the continual uſe of ſnuff gradually vitiates the organs of ſmell; weakens the faculty of ſight, by withdrawing the humours from the eyes; impairs the ſenſe of hearing; renders breathing difficult; depraves the palate; and, if taken too copiouſly, falls into the ſtomach, and, in a high degree, injures the organs of digeſtion.

Beſides the many bad effects already mentioned, taking ſnuff may be attended with another conſequence,

quence, equally dangerous to the alimentary canal. While the noſe is continually obſtructed, and a free reſpiration is impeded, the habitual ſnuff-taker generally breathes through the mouth only; he is always obliged to keep his mouth partly open, and conſequently to inſpire more frequently and with greater efforts. Thus, by inhaling too much air, he probably lays the foundation of that troubleſome flatulency, which is common among thoſe hypochondriacs who habitually take ſnuff. Hence every perſon, unleſs good reaſons can be aſſigned in favour of it, ought to be ſeriouſly diſſuaded from the uſe of ſnuff, as well as of tobacco: and it deſerves to be remarked, that both theſe practices may be ſafely, and cannot be too ſuddenly relinquiſhed, as ſoon as reaſon prevails over ſenſual gratifications.

Of Wax in the Ears.

If the ears be ſeldom, or not properly cleaned, there ſometimes accumulates a ſpecies of wax, which grows tough and hard, diminiſhes the acuteneſs of hearing, obſtructs the paſſage to the ear, and may at length produce total deafneſs. Copious ear-wax, if it become thin and acrid, may occaſion pain, and ſometimes a running or ſuppuration in the ears. Daily waſhing with cold water ſtrengthens theſe organs, and is an excellent preſervative of the ſenſe of hearing.—If it be apprehended,

hended, that inſects have made their way into the cavity of the ear, it may be uſeful to introduce ſome ſweet oil into the orifice, and to repoſe on that ſide, the ear of which is the ſeat of the complaint.

Of Hemorrhages.

THESE are fluxes of blood, ſalutary to both ſexes, when required and regulated by Nature; but, if ſuppreſſed, they may be productive of ſerious and fatal conſequences. The *menſes* are irregular in their appearance and diſappearance; being much influenced by climate, and the conſtitution of the body: the *hemorrhoids*, on the contrary, originate from the mode of living, joined to a particular temperament of the individual. *Bleeding of the noſe* ariſes either from a ſuperabundance of blood, and its impetuous circulation, or from the burſting of one of the ſmall arteries.—As long as theſe fluxes continue within proper limits, and do not exhauſt the ſtrength of the perſon ſubject to them, there is not the leaſt neceſſity to employ any artificial means of ſuppreſſing them; becauſe Nature muſt not be rudely checked in her beneficent efforts. Nay, even the affections and paſſions of the mind ought to be duly regulated, particularly by females of an irritable temper, during the recurrence of the menſes; for theſe may, according to circumſtances, be either preter-

naturally increaſed, or totally ſuppreſſed, to the great injury of health.

Laſtly, it is extremely imprudent for young women to expoſe their feet and legs to dangerous colds, in waſhing the floors of rooms and paſſages upon their knees, at a time when they ought particularly to guard againſt the acceſs of damp and cold. Humane and ſenſible perſons would not require their ſervants to follow this prejudicial practice, by which they are liable to contract the moſt obſtinate diſorders: it produces obſtructions in the abdomen, ſwelling of the legs, dropſical complaints, palſy, and even conſumptions;—hence the multitude of female ſervants continually taking refuge in the different hoſpitals.

Of the retention of Milk.

Not leſs hurtful than the ſuppreſſion of hemorrhages, is the retention of the milk in the female breaſt. This, likewiſe, is generally occaſioned by indulging in fits of paſſion, or by expoſing the body, and particularly the lower extremities, to the influence of damp and cold places, or wearing wet clothes, and linen not properly aired. Hence may ariſe nodules, or ſmall lumps in the breaſts, troubleſome ſwellings, eſpecially if the milk be abundant, inflammations accompanied with excruciating pain and violent fever, ulcers in one or more parts of the body at the ſame time, or ſcir-

rhous calloſities; and, at length, if neglected or miſmanaged, cancer itſelf. In many inſtances, a premature ſtoppage of the milk, in lying-in women, has produced inflammation of the womb, and a ſevere child-bed fever. Laſtly, imprudence with regard to food and drink, dreſs, air, &c. may occaſion the ſuppreſſion of the milk, as well as of every other evacuation.

CHAP. IX.

Of the SEXUAL INTERCOURSE; *its phyſical conſequences with reſpect to the Conſtitution of the Individual;—under what circumſtances it may be either conducive or hurtful to Health.*

A SUBJECT of ſuch extenſive importance, both to our phyſical and moral welfare, as the conſequences reſulting from either a too limited or extravagant intercourſe between the ſexes, deſerves the ſtricteſt inquiry, and the moſt ſerious attention of the philoſopher.

The inclination to this intercourſe, and the evacuation connected with it, are no leſs inherent in nature, than other bodily functions. Yet, as the ſemen is the moſt ſubtile and ſpirituous part of the human frame, and as it ſerves to the ſupport of the nerves, this evacuation is by no means abſolutely neceſſary; and it is beſides attended with circumſtances not common to any other. The emiſſion of ſemen enfeebles the body more than the loſs of twenty times the ſame quantity of blood, more than violent cathartics, emetics, &c.; hence exceſſes of this nature produce a debilitating effect on the whole nervous ſyſtem, on both body and mind.

It is founded on the obſervations of the ableſt phyſiologiſts, that the greateſt part of this refined

fluid is re-abſorbed, and mixed with the blood, of which it conſtitutes the moſt rarefied and volatile part; and that it imparts to the body peculiar ſprightlineſs, vivacity, and vigour. Theſe beneficial effects cannot be expected, if the ſemen be wantonly and improvidently waſted. Beſides, the emiſſion of it is accompanied with a peculiar ſpecies of tenſion and convulſion of the whole frame, which is always ſucceeded by relaxation. For the ſame reaſon, even libidinous thoughts, without any loſs of ſemen, are debilitating, though in a leſs degree, by occaſioning a propulſion of the blood to the genitals.

If this evacuation, however, be promoted only in a ſtate of ſuperfluity, and within proper bounds, it is not detrimental to health. Nature, indeed, ſpontaneouſly effects it, in the moſt healthy individuals, during ſleep; and, as long as we obſerve no difference in bodily and mental energy after ſuch loſſes, there is no danger to be apprehended from them. It is well eſtabliſhed, and atteſted by the experience of eminent phyſicians, that in certain indiſpoſitions, both of men and women, this is the only permanent remedy that can be adviſed, to reſtore their languiſhing health. It is not uncommon to find, that melancholy, incurable by any other means, has been happily removed, in perſons of both ſexes, by exchanging a ſingle ſtate for that of wedlock.

There

There are a variety of circumſtances, by which either the utility or the inſalubrity of the ſexual intercourſe is, in general, to be determined.—It is conducive to the well-being of the individual, if Nature (not an extravagant or diſordered imagination) induces us to ſatisfy this inclination, eſpecially under the following conditions:

1. In young perſons, that is, adults, or thoſe of a middle age; as, from the flexibility of their veſſels, the ſtrength of their muſcles, and the abundance of their vital ſpirits, they can the better ſuſtain the loſs occaſioned by this indulgence.

2. In robuſt perſons, who loſe no more than is almoſt immediately replaced.

3. In ſprightly individuals, and ſuch as are particularly addicted to pleaſure; for, the ſtronger the natural deſire, the ſafer is its gratification.

4. In perſons who are accuſtomed to it;—for Nature purſues a different path, accordingly as ſhe is habituated to the re-abſorption, or to the evacuation of this fluid.

5. With a beloved object; as the power animating the nerves and muſcular fibres is in proportion to the pleaſure received.

6. After a ſound ſleep; becauſe then the body is more energetic; is provided with a new ſtock of vital ſpirits; and the fluids are duly prepared:—hence the early morning appears to be deſigned by Nature for the exerciſe of this function; as the body is then moſt vigorous; and, being un-

employed in any other purſuit, its natural propenſity to this is the greater: beſides, at this time, a few hours ſleep can be readily obtained, by which the expended powers are, in a great meaſure, renovated.

7. With an empty ſtomach; for the office of digeſtion, ſo material to the reſtoration of bodily ſtrength, is then uninterrupted. Laſtly,

8. In the vernal months; as Nature, at this ſeaſon in particular, incites all the lower animals to ſexual intercourſe; as we are then moſt vigorous and ſprightly; and as the ſpring is not only the ſafeſt, but likewiſe the beſt time, with reſpect to the conſequences reſulting from that intercourſe. It is well aſcertained by experience, that children begotten in ſpring are of more ſolid fibres, and conſequently more vigorous and robuſt, than thoſe generated in the heat of ſummer, or cold of winter.

It may be collected from the following circumſtances, whether or not the gratification of the ſexual impulſe has been conducive to the well-being of the body; namely, if it be not ſucceeded by a peculiar laſſitude; if the body do not feel heavy, and the mind averſe to reflection: all which are favourable ſymptoms, indicating that the various powers have ſuſtained no eſſential loſs, and that ſuperfluous matter only has been evacuated.

Farther, the healthy appearance of the urine, in this caſe, as well as cheerfulneſs and vivacity of mind,

mind, alſo prove a proper coction of the fluids, and ſufficiently evince an unimpaired ſtate of the animal functions, a due perſpiration, and a free circulation of the blood.

There are, however, many caſes in which this gratification is the more detrimental to health, when it has been immoderate, and without the impulſe of Nature, but particularly in the following ſituations:

1. In all debilitated perſons; as they do not poſſeſs ſufficient vital ſpirits; and their vigour, after this enervating emiſſion, is conſequently much exhauſted. Their digeſtion neceſſarily ſuffers, perſpiration is checked, and the body becomes languid and heavy.

2. In the aged, whoſe vital heat is diminiſhed, whoſe frame is enfeebled by the moſt moderate enjoyment, and whoſe ſtrength, already reduced, ſuffers a ſtill greater diminution, from every loſs, that is accompanied with a violent convulſion of the whole body.

3. In perſons not arrived at the age of maturity:—by an early intercourſe with the other ſex, they become enervated and emaciated, and inevitably ſhorten their lives.

4. In dry, choleric, and thin perſons: theſe, even at a mature age, ſhould ſeldom indulge in this paſſion, as their bodies are already in want of moiſture and pliability, both of which are much diminiſhed by the ſexual intercourſe, while

the bile is violently agitated, to the great injury of the whole animal frame.—Lean perſons generally are of a hot temperament; and the more heat there is in the body, the greater will be the ſubſequent dryneſs. Hence, likewiſe, to perſons in a ſtate of intoxication, this intercourſe is extremely pernicious; becauſe in ſuch a ſtate the increaſed circulation of the blood towards the head, may be attended with dangerous conſequences, ſuch as burſting of blood-veſſels, apoplexy, &c.;—the plethoric are particularly expoſed to theſe dangers.

5. Immediately after meals; as the powers requiſite to the digeſtion of food are thus diverted, conſequently the aliment remains too long unaſſimilated, and becomes burdenſome to the ſtomach.

6. After violent exerciſe; in which caſe it is ſtill more hurtful than in the preceding, where muſcular ſtrength was not conſumed, but only required to the aid of another function. After bodily fatigue, on the contrary, the neceſſary energy is in a manner exhauſted, ſo that every additional exertion of the body muſt be peculiarly injurious.

7. In the heat of ſummer, it is leſs to be indulged in than in ſpring and autumn; becauſe the proceſs of concoction and aſſimilation is effected leſs vigorouſly in ſummer than in the other ſeaſons, and conſequently the loſſes ſuſtained are not ſo eaſily recovered. For a ſimilar reaſon, the ſexual commerce is more debilitating, and the capacity

for it ſooner extinguiſhed, in hot than in temperate climates. The ſame remark is applicable to every warm temperature combined with moiſture, which is extremely apt to debilitate the ſolid parts. Hence hatters, dyers, bakers, brewers, and all thoſe expoſed to ſteam, generally have relaxed fibres.

8. In a poſture of body, which requires great muſcular exertion, it is comparatively more enfeebling; as, in this caſe, various powers are exhauſted at once.

It is an unfavourable ſymptom, if the reſt after this intercourſe be uneaſy; which plainly indicates, that more has been loſt, than could be repaired by ſleep: but if, at the ſame time, it be productive of relaxation, ſo as to affect the inſenſible perſpiration, it is a ſtill ſtronger proof that it has been detrimental to the conſtitution.—There are, as has been before obſerved, two principal cauſes, from which the indulgence in this paſſion has a debilitating effect on the conſtitution, particularly in men:—1. by the convulſive motion of the whole frame, combined with the impaſſioned ecſtaſy of the mind; and, 2. by the loſs of this eſſential fluid, more than by any other circumſtance. But, if it be not emitted, the ſubſequent relaxation is inconſiderable, and not much increaſed even on the following day, if the ſemen ſhould be ejected, upon a repetition of the intercourſe.—It certainly is ill-founded, that ſwellings of the ſcrotum may

ariſe

ariſe from a ſtagnation of the ſeminal fluid: ſuch ſwellings, if they really take place, are not attended with any danger; as experience informs us, that they are either again abſorbed, to the benefit of the body, or if the accumulation of the ſemen become too copious, it is ſpontaneouſly evacuated by nature.

The relaxation of thoſe who keep within the bounds of moderation, in this reſpect, does not continue long; one hour's ſleep is generally ſufficient to reſtore their energy. Such temperance is highly beneficial to the whole body, while it ſerves to animate all its powers, and to promote inſenſible perſpiration, as well as the circulation of the blood. The ſemen can be emitted without injuring the body, if nature alone demand it, that is, when the reſervoirs are full, and a material ſtimulus occaſions it, without the active concurrence of imagination.

As it is principally this fluid which affords vivacity, muſcular ſtrength, and energy to the animal machine, the frequent loſs of it cannot but weaken the nerves, the ſtomach, the inteſtines, the eyes, the heart, the brain—in ſhort, the whole body, together with the mental faculties;—it in a manner deſtroys the ardour for every thing great and beautiful, and ſurrenders the voluptuary, in the prime of his life, to all the terrors and infirmities of a premature old age, from which even the conjugal ſtate cannot ſave him. The moſt certain conſequence

ſequence of exceſs in venery is hypochondriaſis, frequently accompanied with incurable melancholy: the unhappy victim endeavours to exhilarate himſelf by a repetition of theſe convulſive exertions of his vital ſpirits, and thus precipitates himſelf into ſtill greater miſery.—Many of the diſeaſes of the eyes originate from ſuch intemperance; and theſe votaries of pleaſure are not unfrequently attacked with *tabes dorſalis*, or conſumption of the back, which generally proves fatal.

Here likewiſe, every individual ought to pay proper regard to his conſtitution. Some are provided by Nature with an uncommon portion of bodily vigour, while others are but ſparingly ſupplied: the former, therefore, overcome ſlight tranſgreſſions of this kind, without much danger, while the latter cannot commit exceſſes with impunity. The natural inſtinct ought always to be conſulted, in whatever relates to this function; but it ſhould not, as is frequently the caſe, be confounded with the artificial ſtimulus. Hypochondriacs, indeed, as well as thoſe who make uſe of many nouriſhing ſpecies of food and drink, are ſometimes ſtimulated merely by a certain acrimony in the abdominal veſſels; ſuch a ſtimulus, however, is totally unconnected with the impulſe of nature.

Frequent and copious emiſſions, during ſleep, are productive of equally bad effects; they bring on the

the frailties of age at an early period of life, and ſoon prepare the exhauſted ſufferer for the grave. But infinitely more dangerous is the ſecret vice of Onaniſm, which debilitates the body more than any other ſpecies of debauchery. By this execrable practice, a greater quantity of ſemen is evacuated, than by the natural commerce between the ſexes; the vital ſpirits cannot operate ſo uniformly, as to counterbalance the convulſive effects which agitate the whole animal frame; and the circumſtances, which render this hateful vice ſo deſtructive to both ſexes, particularly at a tender age, are, that the opportunities of committing it are more frequent than thoſe of the ſexual intercourſe, and that it but too often becomes habitual.

The imagination which, by the natural union of the ſexes, is in a certain degree gratified, becomes with every repetition of Onaniſm more diſordered, and is continually filled with libidinous images: and although the frequent loſs of ſemen is, for a conſiderable time, ſupplied by a fluid of an inferior quality, yet, even by this imperfect ſupply, the body is drained of the ſpirituous and moſt valuable parts of its fluids.

All kinds of evacuation, when immoderate, are prejudicial to health; but that of the ſemen is particularly ſo; for it is an eſtabliſhed fact, that every ſtimulus increaſes the ſecretion of humours, and that Nature is neceſſarily forced to make irregular efforts,

efforts, to reſtore the loſſes ſuſtained, in the moſt ſpeedy, though in its conſequences, the moſt ruinous manner.

As moſt female animals refuſe to receive the males, while they are in a ſtate of pregnancy, the connection with pregnant women appears to be phyſically improper. Although the dangerous conſequences thence ariſing, both to the mother and child, may have been exaggerated, yet the embrace of women far advanced in pregnancy is certainly not conformable to the laws of Nature, and ought not to be conſidered as a matter of indifference. Such females as wantonly ſubmit to it may readily miſcarry; for the fetus is thus much compreſſed, and an additional flow of humours is thereby occaſioned. If, however, in married life, this intercourſe, notwithſtanding its impropriety, ſhould be indulged in, it ought to be practiſed with precaution, and not too frequently; as ſuch exceſſes may not only enfeeble the mother, but likewiſe be attended with effects very hurtful to the child. Nay, it is aſſerted by ſome authors, that the frequent caſes of *hydrocephalus*, or dropſy in the head, are to be aſcribed chiefly to this practice among parents;—a concluſion which, though hypothetical, is not unreaſonable.

A connection with females ſuckling children, is not leſs improper; as the milk is thereby vitiated, and the health of the infant affected.—Nor is it juſtifiable to gratify this paſſion during the menſes; which

which may be either thus ſuddenly ſuppreſſed, or, by the increaſed acceſs of the fluids, may terminate in an hemorrhage of the womb: beſides which, the ſexual intercourſe during this period, as well as for ſome days immediately preceding, cannot anſwer the purpoſe of generation; becauſe the ovum of the female, being but ſlightly attached, is again ſeparated by the periodical diſcharge. Hence the congreſs of the ſexes is moſt generally crowned with fertility, after the catemenia have ceaſed; for then the female is in the moſt proper ſtate for fecundation, becauſe that the ovum has ſufficient time to be conſolidated, before the next menſtrual evacuation.

Not with a view to ſatisfy idle curioſity, but for the information of the judicious reader, I ſhall give ſome particulars, relative to the nature of the ſeminal fluid. The ſemen in men, as it is emitted, conſiſts of various compound humours. Beſides the real ſemen prepared in the ſcrotum, and depoſited in the proper veſicles, it is mixed with the peculiar moiſture contained in the latter, with the liquor ſecreted by the proſtrate gland, and probably alſo with ſome mucus or phlegm from the urethra. It is of a greyiſh colour, inclining to white, is glutinous and tough, has a very volatile, penetrating ſmell, and is of conſiderable ſpecific gravity. In water, the thicker part, which in all probability is the pure ſemen, ſinks to the bottom; another part appears in fine threads, and forms a

thin pellicle on the ſurface of the water. In perſons not arrived at the age of maturity, and likewiſe in enervated adults, it is of a thin and ſerous conſiſtence.

In the freſh ſemen of thoſe who are capable of procreating, we find a great number of animalculæ, which can be perceived only by means of the moſt powerful microſcopes: theſe do not appear to be mere veſicles filled with air; as they are formed irregularly, one extremity being ſomewhat ſpherical, the other ſmaller and rather pointed;—their ſuppoſed uſe will be mentioned towards the concluſion of this chapter, when treating on the different theories of generation.

As part of the ſmall artery, through which the blood is propelled into both teſticles, runs immediately under the ſkin, and conſequently the blood is conducted from a warmer to a much colder place; as the ſeminal tubes in the teſticles are very delicate and long, and take throughout a ſerpentine courſe—the canal traverſing the upper teſticle (*epididymis*) being alone thirty feet long and upwards; as, laſtly, the narrow ſeminal tubes paſs over into the wider canal of the epididymis, and this again into the ſtill wider ſeminal paſſage: it is obvious, that the ſecretion and evacuation of the ſemen not only takes place very ſlowly, but alſo in very ſmall quantity.

Nature ſeems to employ a conſiderable time in preparing and perfecting a fluid, which is indiſpenſably

penſably neceſſary to the propagation of the ſpecies. The quantity, therefore, which is emitted in every intercourſe between the ſexes, and which is computed to be equal to half an ounce weight *, can be but gradually replaced. Hence it happens, that even men of ſtrong conſtitutions cannot indulge in venery more than once in three or four days, for any conſiderable time, without impairing their health, and diminiſhing their ſtrength. Theſe remarks, however, apply chiefly, and almoſt excluſively, to the male ſex; for, with regard to women, it is an erroneous notion, that they ſecrete any ſemen;—what has formerly been conſidered as ſuch, conſiſts merely of a pituitous liquor, proceeding from the womb and the vagina.

To return from this ſhort digreſſion, I ſhall farther obſerve, that, where it may be otherwiſe proper, it is an excellent and healthful rule, (however ludicrous it may appear to the ſenſualiſt) to gratify the inclination for the ſexual commerce only at regular ſtated periods, ſo that nature may become habituated to it, without making unuſual and hurtful efforts. This might be attended with the additional advantage, that perſons, in a conjugal

* This aſſertion, as well as that immediately following, reſt upon the authority of Prof. Loder, of Jena; and I here refer to his excellent work: "*Elements of Medical Anthropology, &c.*" (in German), p. 411. ſecond edition, 8vo. *Weimar*, 1793.

ſtate,

ſtate, would not be ſo apt to commit exceſſes, which, in the end, are productive of ſatiety and indifference towards the object of former affection, and which are undoubtedly the frequent cauſe of a feeble and degenerate offspring.

No irregularities whatever are more certainly puniſhed than thoſe of venery; and, though the conſequences ſhould not immediately take place, they unavoidably follow, and generally at a time when they are moſt ſeverely felt; ſometimes in the organs of generation alone, and ſometimes over the whole body. Even the connection with the moſt beloved object, the poſſeſſion of whom has been long and anxiouſly wiſhed for, does not exempt the voluptuary from theſe prejudicial effects, if the bounds of moderation be exceeded: the imagination at length becomes diſordered; the head is filled with libidinous images; and the predominating idea of ſenſual enjoyment excludes the reflections of reaſon. Thus Nature becomes in a manner forced to conduct the fluids to the parts of generation, ſo that ſuch unfortunate perſons cannot relinquiſh this deſtructive habit; they are troubled with involuntary emiſſions of the ſemen, which are extremely debilitating, and which either deprive them entirely of the faculty of procreating, or deſtroy the elaſticity of the parts, and exhauſt the ſemen to ſuch a degree, as to produce only feeble and enervated children.

In thoſe who lead a life of debauchery, ſpaſmodic affections, and even ruptures, are not uncommon: women are afflicted with the *fluor albus*, violent fluxes of the menſes, bearing down of the vagina, and innumerable other maladies of a diſagreeable nature. Theſe deſtructive effects on the body are at firſt manifeſted by a general relaxation of the ſolids: the whole nervous ſyſtem is reduced to a ſtate of extreme debility, which is ſeldom, if ever, removed by the moſt rigorous adherence to diet, and the moſt appoſite medical remedies. Hence neceſſarily ariſe, as has been already obſerved, the almoſt infinite varieties of hypochondriaſis, and imbecility, to ſo alarming a degree, that perſons of this deſcription cannot direct their attention to one object, for a quarter of an hour together: their ſpirits are exhauſted; their memory as well as their judgment are greatly impaired; and in ſhort, all the faculties of mind, all its ſerenity and tranquillity, are ſo much affected, that they ſcarcely enjoy one happy moment.

The external ſenſes do not ſuffer leſs upon theſe occaſions: the eyes, eſpecially, become weaker, imaginary figures are continually floating before them, and frequently the power of viſion is entirely deſtroyed.—The ſtomach alſo, on account of its intimate connection with the nerves, in a great meaſure partakes of theſe infirmities:

whence ariſe diſeaſes of various degrees of malignity;—the lungs too become diſordered; hence the many lingering and incurable conſumptions, which deſtroy ſuch numbers in the prime of life. If, however, they ſurvive the baneful effects of their intemperance, their bodies become bent from abſolute weakneſs, their gait ſluggiſh and tottering, and the reſidue of their days is marked with painful debility.

Young perſons, as well as thoſe whoſe employments require much muſcular exertion, are in an uncommon degree weakened by frequent debauches. Indeed, the ſexual intercourſe, even within the limits of moderation, is more hurtful to ſome individuals than to others. Thus, a perſon born of ſtrong and healthy parents is not nearly ſo much hurt by occaſional extravagance as another, whoſe parents were weak and enervated, or who is himſelf threatened with conſumption; and, laſtly, thoſe alſo ought to be abſtemious in this reſpect, who feel an unuſual laſſitude and weakneſs, after the leaſt indulgence.

There are people who, from ignorance, have long been in the habit of committing exceſſes, and who wiſh at once to reform their mode of life; the conſequence of this ſudden change generally is an increaſed debility; and they become very liable to fits of the gout, hyſteric and hypochondriacal complaints. As they are ſenſible of their growing weakneſs,

they expect to relieve themſelves by ſtrengthening remedies, which render their ſituation ſtill worſe, being apt to occaſion involuntary emiſſions of ſemen in the night, to relax and deſtroy the ſtomach, and at length to produce an irritating acrimony in the inteſtines, which is the frequent cauſe of ſuch emiſſions. Even the mild corroborants cannot be uſed here with any hopes of ſucceſs; as the body is overloaded with pituitous phlegm, from which readily ariſe jaundice and dropſy. Hence it is more adviſable, and, at leaſt in a phyſical reſpect, more ſalutary, to return from ſuch irregularities by gradual ſteps, than by a too ſudden and dangerous change.

It is further remarkable, that moſt perſons, eſpecially in the higher ranks, do not marry at a proper period of life; partly from caprice and family-conſiderations; partly on account of the difficulty to maintain a family, in the preſent more expenſive mode of living; and partly from other cauſes which are beſt known to bachelors. Thus they enter into the conjugal ſtate, when their frame is enervated by diſſipation of every kind; but ſuch debauchees ought not to be permitted by the State to encumber the world with a degenerate offspring.

On the contrary, to be married too early, and before a perſon has attained the age of maturity, is likewiſe improper and hurtful. Every candidate for matrimony ſhould endeavour to obtain the

moſt accurate intelligence, whether the object of his affection be qualified for the various duties of that ſtate, or whether ſhe be ſubject to phthiſical, hyſteric, and nervous complaints, all of which ought to be guarded againſt; as, beſides the miſfortune of being united to a valetudinary partner, healthy women only will produce ſound and vigorous children.

Thoſe who do not marry for the ſake of wealth and family-intereſt, ſhould chooſe a well-formed and agreeable partner, as deformed mothers ſeldom bring forth handſome children. The natural diſpoſition of a woman likewiſe, deſerves to be inveſtigated, previous to the union; for it is the opinion of accurate obſervers, that children moſt generally inherit the propenſities and paſſions of the mother. There ought to be no remarkable difference between the age of the married couple; and the moſt proper time of life for matrimony, in our climate in general, appears to be that between the age of eighteen and twenty in the female, and from twenty-two to twenty-four in the male ſex.

Laſtly, women who are hump-backed, or who have had the rickets in their infancy, ought not to enter the ſtate of wedlock; the former, in particular, (according to the rules of ſound ſtate-policy) ſhould by no means be allowed to marry, until examined by profeſſional perſons, whether there be any impediment to child-bearing from the

preternatural ſtructure of the *pelvis*:—this frequently renders the Cæſarean operation neceſſary; or the artificial ſeparation of the pelvis is connected with imminent danger of life. For the ſame reaſon, even elderly women ſhould not be encouraged to engage in matrimony, as they either remain barren, or, if not, they experience very difficult and painful parturition.

In ſome rare inſtances, however, too great abſtinence may be the cauſe of ſerious diſtempers. A total retention of the ſemen is not indeed always hurtful; but it may be ſo, occaſionally, to perſons naturally laſcivious, and to thoſe of a corpulent habit. Theſe are generally provided with an abundance of the ſeminal fluid, which, if too long retained in the body, cauſes involuntary evacuations, plethora, ſwellings, pain and inflammation of the ſeminal veſſels, the inſpiſſation and at length corruption of the ſtagnating ſemen—and ſometimes priapiſms, convulſions, melancholy, and at length furious lewdneſs.

The female ſex are not leſs liable to diſeaſes from inevitable abſtinence: loſs of ſtrength, *chloroſis*, *fluor albus*, hyſterics, and even *furor uterinus*, may ſometimes be the conſequence. Yet, I cannot upon this occaſion omit to remark, that theſe effects ſeldom, if ever, take place in thoſe who live regularly, and do not encourage libidinous ideas; and that both males and females would undoubtedly derive greater benefit from total

total continence, till marriage, than by an unlimited indulgence in venery: in the former caſe, they would not only in a great meaſure contribute to their vigour of body and mind, but alſo to the prolongation of life.—Young women of an habitually pale colour, may be juſtly ſuſpected of being troubled with the *fluor albus*;—or of having an ardent deſire to change their ſtate.

To repair the injuries brought on by an exceſſive indulgence in the ſexual commerce, ſuch means ought to be employed, as are calculated to remove the irregularities which have taken place in the functions of digeſtion and perſpiration, and to give new energy to the ſolid parts. With this intention, the quantity of food is not of ſo much conſequence as its quality; hence the diet ſhould be nouriſhing, of eaſy digeſtion, and have a tendency to promote inſenſible perſpiration: in all ſtates of debility, a light and ſpare diet is the moſt ſuitable to reſtore ſtrength, without exerting too much the digeſtive organs. Rich nouriſhment, therefore, as well as tough, flatulent, and crude victuals, or thoſe which are liable to ferment in the ſtomach, would, in ſuch caſes, be extremely pernicious.—But, above all, a rigid degree of abſtinence from the intercourſe which has occaſioned the weakneſs, cannot be too ſeriouſly recommended; as this alone is generally ſufficient to reſtore muſcular vigour, eſpecially where youth

and ſoundneſs of conſtitution are in favour of the individual.

Although we are poſſeſſed of no ſpecifics, ſtrictly deſerving the appellation of *aphrodiſiacs*, yet there certainly are means, which tend to promote the deſire, as well as the capacity, of carrying on the ſexual intercourſe: theſe are either ſuch as contribute to increaſe the ſeminal fluid, or ſtimulate the genital organs. Of the former kind are thoſe, which afford a rich chyle and ſalubrious blood, which conduct this fluid more abundantly to the parts of generation, and are on that account mildly diuretic; for inſtance, milk, eggs, tender and nouriſhing meat, herbs and roots of a mild, ſpicy nature, and ſuch as promote the ſecretion of urine, moderate bodily exerciſe, particularly on horſe-back, &c. Merely ſtimulating remedies, however, ſhould not be employed without great precaution, eſpecially by the infirm, and thoſe beyond a certain age; for the emiſſion of ſemen, in theſe, is generally attended with debility and diſguſt; while in young and robuſt perſons there is no neceſſity to increaſe the ſecretion of that fluid by artificial means.

There are likewiſe remedies of an oppoſite tendency, more effectually anſwering the purpoſe of moderating, or rather checking a too violent propenſity to venery, than thoſe before ſtated, with a view to promote it. In the preſent ſtate of ſociety,

ciety, and particularly among maritime nations, where a great proportion of men and women are obliged to lead a ſingle life, the means conducive to diminiſh this paſſion, deſerve every attention. Of this nature are:

1. A laborious and rigid life, much bodily exerciſe, little ſleep, and a ſpare diet; ſo that the fluids may be more eaſily conducted to other parts, and that they may not be produced in a greater quantity, than is requiſite to the ſupport of the body. For the ſame reaſon, it is adviſable, as ſoon as the deſire of committing exceſſes riſes to any height, immediately to reſort to ſome ſerious avocation, to make uſe of leſs nutritious food and drink, to avoid all diſhes peculiarly ſtimulating to the palate, and to abſtain from the uſe of wine, and other ſpirituous liquors.

2. To ſhun every ſpecies of excitement; ſuch as intimacy with the other ſex, amorous converſations, libidinous narratives, ſeductive books, pictures, &c.

3. A cool regimen in every reſpect:—hence Plato and Ariſtotle recommended the cuſtom of going barefoot, as a means of checking the ſtimulus to carnal deſire; ſo that this indecorous practice was conſidered by the ancients as a ſymbol of chaſtity. The cold bath was likewiſe ſuggeſted for the ſame purpoſe; others again, among whom may be reckoned Pliny and Galen, adviſed to wear thin

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ſheets of lead on the calves of the legs, and near the kidneys.—With the ſame intention, and probably with better effect, may be uſed the cooling ſpecies of nouriſhment, ſuch as lettuce, water-purſlane, cucumbers, &c.—for common drink, mere water; and, if the impulſe of paſſion ſhould increaſe, a ſmall quantity of nitre, vinegar, or vitriolic acid, may occaſionally be added to the water, to render it more cooling.—Yet all theſe and ſimilar remedies are of little or no advantage to the habitual voluptuary, eſpecially if ſubject to hypochondriaſis. The exciting cauſe in ſuch perſons not unfrequently proceeds from a diſeaſed abdomen, which, as has been before obſerved, may be ſo much obſtructed, that all other remedies are in vain, until the material ſtimulus of ſuch obſtructions be removed.—Laſtly,

4. The various *extenuants*, ſuch as ſpices of all kinds, and the ſmoking of tobacco, violent exerciſe, &c. are equally improper; as theſe would inevitably impair the health of perſons naturally lean, ſanguine, and choleric; while in cold and phlegmatic temperaments, they would rather tend to increaſe than to abate the ſtimulus.

Having now, as far as was conſiſtent with the plan of this work, inveſtigated both the beneficial and detrimental conſequences of the ſexual intercourſe, I propoſe to conclude this ſubject with a conciſe view of the principal *theories of generation*, which

which have been offered by the ableſt phyſiologiſts, and which I have extracted from the afore-mentioned work of Dr. Loder.

" The origin of the firſt germ of the embryo, (ſays the learned Profeſſor) and the manner of its formation, are ſo obſcure, that of all the conjectures made by the moſt attentive and ingenious obſervers, none has yet obtained general credit, or arrived at any degree of certainty. The ſexual function appears to belong to thoſe ſecrets of Nature, to the developement of which the powers of the human underſtanding are altogether inadequate. Yet it is not undeſerving the attention of a reflecting mind, to become acquainted with the diverſified hypotheſes that have prevailed on this ſubject, and particularly thoſe which have the greateſt ſhare of probability in their favour.

" Some of the ancient naturaliſts have ſearched for the firſt germ of the embryo, not within the bodies of the parents, but abſolutely in external objects; while they maintained, that it is introduced from without, either by the air, or particular articles of nouriſhment; and, if it happen to meet with a body qualified to effect its formation, it then receives life, and grows; but, in the contrary caſe, it paſſes away unchanged. This whimſical conjecture is undeſervedly tranſmitted to our times, by the name of *panſpermia*;—it is unworthy of refutation, as it is unfounded, and totally inconſiſtent with experience.

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"By another hypotheſis (*generatio æquivoca*) it was aſſerted, that a variety of inſects, and even of the ſmaller animals, may originate from extraneous ſubſtances, by mere fermentation and putrefaction, without previous generation, or any intercourſe of males and females.—Thus maggots were ſaid to ariſe from putrifying meat, and in wounds; fleas to grow in urine and feces, &c. But by more accurate obſervations we have learnt, that ſuch vermin are only generated in putreſcible bodies, when the eggs of thoſe inſects, which feed upon putrid ſubſtances, have been previouſly depoſited in them.—Yet there is a certain kind of minute animals, which ſeem to receive life merely from the vivifying powers of Nature, being bred, by infuſion, in ſubſtances foreign to their ſpecies; and to theſe perhaps the preceding theory is ſo far applicable, as their origin is involved in obſcurity.

"Other naturaliſts have aſcribed the firſt germ of the embryo excluſively to the ſemen of the male. Hence aroſe the ſingular opinion, that the ſmall embryo, with all its parts, is already depoſited viſibly in the ſemen; or that it may be produced from this humour by mere fermentation, or chemical proceſs, without the co-operation of the animal body. Hence alſo the hypotheſis formerly maintained by ſeveral eminent writers, that the animalculæ of the ſemen are to be conſidered as germs of embryos; that, with every intercourſe between

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the ſexes, an innumerable quantity of theſe is introduced into the female parts of generation; that only one or two of ſuch animalculæ arrive at the ovaria, from theſe return to the womb, and progreſſively grow there; but that all the others neceſſarily periſh *.—This bold conjecture is not only incompatible with the wiſdom of the Creator, but, beſides other ſtrong arguments againſt it, in a manner refutes itſelf by this circumſtance, that in very different creatures, for inſtance, in men and in aſſes, there are found animalculæ exactly ſimilar, while in animals of the greateſt reſemblance in other reſpects, we meet with animalculæ altogether different. For this reaſon, they ought to be conſidered as little creatures inherent in the animal body, and which indeed may form an eſſential part of a fruitful ſemen, but the uſe of which is yet unknown.

" Another ſect of natural philoſophers, who attributed to both ſexes an equal ſhare in the pro-

* *Ludwig von Hammon*, a young man, born at Dantzig, during the time of his ſtudying medicine at Leyden, and in the courſe of his microſcopical purſuits, diſcovered, in the month of Auguſt, 1677, in a drop of the ſemen of a cock recently diſſected, a kind of ocean, in which ſwam thouſands of little, lively, active animals.—The ſame phenomenon was alſo obſerved in the mature ſemen of other male animals; and in theſe animalculæ were immediately thought to be ſeen the germs of ſubſequent perfect animals. By this diſcovery, a key was ſuppoſed to be found, which would unlock the whole myſtery of generation.

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creating function, maintained, that the germ of the embryo originates in a mixture of the male and female ſemen, the latter of which proceeds from the ovaria. Among later naturaliſts, the celebrated BUFFON was the principal ſupporter of this opinion. He endeavoured to eſtabliſh this hypothetical notion, by conjoining with it the idea of certain *internal forms*, which were requiſite to the formation of the parts of the body; in conſequence of which he maintained, that the ſex of the embryo is determined by the circumſtance of its conſiſting of a greater quantity of male or female ſemen.—But, as the ſuppoſed female ſemen does not proceed from the ovaria, and as the ovaria are not connected with the womb by any tubes, but merely by ſolid ligaments, it follows that women ſecern no ſemen, and what is improperly ſo called, is only, as I have already obſerved, a pituitous liquor ſecreted from the uterus and the vagina. It is farther inconceivable, that the embryo could be endowed with corporeal parts, different from thoſe of father and mother, if it originated merely in the mixture of the ſeminal fluids of both, and if theſe ſhould comprehend all the individual parts of the body. Beſides, the fanciful internal forms of Buffon cannot be proved by any argument or obſervation.

" Again, others have aſcribed the germ of the embryo to the mother alone, while they granted to the male ſemen no other power than that of vivification.

vivification. Theſe philoſophers, among whom we find HALLER and BONNET, ſeriouſly aſſerted, that the whole body of the embryo lies already prepared in the ovary of the mother, ſo that it requires only to be developed, and that the male ſemen commmunicates merely the firſt impulſe to this developement. They certainly went too far in this aſſertion; yet it is highly probable, that the crude matter already exiſts in the ovary, and that it is firſt animated by the ſemen of the male, and thus qualified for its gradual formation.

" Reſpecting the manner in which the embryo is formed, there prevail two principal theories, namely, that of *evolution* *, and that of *gradual formation*

* " According to this theory, (ſays the facetious *Prof.* BLUMENBACH, *of Göttingen*,) we, and indeed all the children of Adam, were at one time, *ipſo facto*, pent up in the two ovaria of our common mother, Eve. There we lay, as it were, aſleep; and, though aſtoniſhingly little creatures, yet completely organized bodies, and perfect miniatures of the forms we have ſince attained; for, ſays HALLER, " *All our viſ-*
" *cera, and the bones themſelves were then already formed, although*
" *in a kind of fluid ſtate.*" That which we call impregnation, is nothing elſe than the action of awakening the germ from its lethargic ſtate, by means of the male ſemen, which ſtimulates the little creature's heart to the firſt pulſation; and ſo on.

" The ſame kind of idea has lately induced a very celebrated naturaliſt of Geneva, and a warm advocate of this theory, to plan out for us a hiſtory of organized bodies previous to the ſtate of impregnation; from which we learn,

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formation (*epigeneſis*). Agreeably to the former, it was conjectured, that all organic bodies, which have

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1. that we are all much older than we ſuppoſe ourſelves to be; 2. that all mankind are exactly of the ſame age, the great-grandfather being not a ſecond older than the youngeſt of his great-grandchildren; 3. that this reſpectable age of ours may be about ſix thouſand years. The ſame natural hiſtorian alſo entirely agrees in opinion with Bazin; that ſince this charming long ſeries of years, when we were all packed together, along with Cain and Abel, and the other two hundred thouſand millions of men, which, according to the beſt calculations, have ſince that period gone—*quo pius Æneas, quo Tullus dives, et Ancus;* in a word, ſince the firſt creation, during which time we have been in a kind of lethargic ſleep, though not entirely motionleſs; that during the whole fifty-ſeven centuries, I ſay, previous to our being awakened by the above-mentioned ſtimulus, we were, according to Bazin's opinion, always growing by imperceptible degrees; for inſtance, we were moſt probably rather a little bigger at the time we lay beſide Cain's nieces, than when all their uncles and aunts were of the party, as it is very natural to ſuppoſe, that we muſt then have been conſiderably more ſtraitened for room. In this manner, our apartment became gradually more eaſy and commodious, in proportion as our forefathers were evolved; and we kept continually expanding ourſelves more and more, until the ſucceſſion of evolution at laſt came to our turn!!"

Such is the ludicrous account of a theory which, though leading to the moſt extravagant and romantic concluſions, was ſupported by the great Baron HALLER, and the late Italian philoſopher, SPALLANZANI. Theſe eminent men have endeavoured to ſupport the doctrine of the pre-exiſtence of complete organized *molecule* in the ovaria of females before impregnation, by many experiments and obſervations, which, at firſt ſight, appeared to be ſo far concluſive, that they

have already originated, or which may at any future time originate from one another, have been combined, or incloſed one within another as germs, from the firſt creation of the world; and that they required only a gradual evolution, to bring them to a ſtate of perfection. The ſupporters of this theory alleged the inſtance of the vine-fretter, which evidently contains in itſelf ſeveral generations, as likewiſe that of the butterfly, which lies already formed in its caſe, and various other plauſible examples; but, above all, they endeavoured to explain their hypotheſis by the origin of the chicken in the egg *; which, however, is a direct demon-

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they obtained full and general credit for more than thirty years. Prof. Blumenbach himſelf not only believed in the truth of this abſurd doctrine, but defended it in many of his earlier writings. At length, however, the ſucceſs he unexpectedly met with, in an experiment with a ſpecies of a green-armed polypus (*conferva fontinalis*), and its aſtoniſhingly rapid powers of reproduction, induced this candid philoſopher to acknowledge his former errors, and to publiſh an '*Eſſay on Generation*,' in which he boldly attacks all former theories; attempts to refute them, partly by argument, partly by his peculiarly humorous mode of expoſing the inconſiſtencies they lead to; and, at the ſame time, propoſes a new hypotheſis, the ſubſtance of which I ſhall inſert in a ſubſequent page, when the theory of *gradual formation* will be conſidered.

* To ſuch readers as are deſirous to become more fully acquainted with the particulars of this extraordinary conjecture, it may be uſeful to illuſtrate it with the following

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demonſtration of the contrary. The objections which have been ſtarted againſt this opinion, concerning

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account, extracted from the Eſſay before quoted, from the pen of Prof. Blumenbach.

" Mr. PAUL," ſays he, " a natural hiſtorian of great reputation, has (in his preface to the 8th vol. of the *Collection Academique*, p. 22, & ſeq.) objected to Haller's demonſtration, that, allowing the membranes of the yolk with its inviſible veſſels to have pre-exiſted in the hen, yet it is poſſible that the embryo is only formed during incubation, and that its blood-veſſels afterwards unite with the blood-veſſels of the membranes of the yolk, and thus form an *anaſtomoſis*.

" Baron von Haller immediately declared loudly againſt this objection, and denied it, as a thing altogether *impoſſible*, that the tender veſſels of the microſcopic embryo ſhould be capable of anaſtomoſing with the large blood-veſſels of the giant yolk.

" But what is rather ſingular is, that this very ingenious and meritorious author, who denies the poſſibility of ſuch an anaſtomoſis, ſuppoſes without any heſitation, and in the ſame work, when explaining human conception, that the very minute germ, as ſoon as it has arrived at the cavity of the uterus, forms an adheſion with it, by means of the placenta;—And how?—Juſt in the ſame way that he denies it to the embryo of the hen; that is to ſay, by an anaſtomoſis taking place between the microſcopic and tender branches of the umbilical veſſels, and the giant ones of the maternal uterus.

" The modern advocates for the theory of evolution have taken this obſervation of the yolk of the egg, as the prop of their hypotheſis.—Long before this, however, the ſpawn of the frog had been employed for the ſame purpoſe.

" Nearly a century indeed before that period, SWAMMERDAM announced the wonderful diſcovery, that the black points

cerning the minuteneſs of the germs, and the production of monſters, or bodies of preternatural ſhape,

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points in the ſpawn of a frog were ſo many perfectly-formed little frogs, and that they pre-exiſted in the ovaria, although not diſcoverable by the naked eye.

"The good man ſeemed to have had a *preſentiment* of the uncertainty and inſtability of all vain worldly honours; and he therefore, as is well known, ſoon after betook himſelf to a more ſolid enjoyment, in which Mademoiſelle Bourignon participated. And, indeed, it happened as he appears to have foreſeen; for the ungrateful world now aſcribe the merits of that diſcovery to the celebrated Abbé SPALLANZANI, who has maintained it in ſeveral of his writings, but more particularly in the ſecond volume of his "*Diſſertazioni di fiſica animale e vegetabile.*" Tom. xi. in Modena, 1780, 8vo.

"He calls the little black points of the fecundated ſpawn of frogs, tadpoles, or young frogs; and, as this little black point exactly reſembles the ſame in the unfecundated ſpawn, he reaſons, agreeably to his logic, that the tadpoles muſt have exiſted in the mother.—I do not know what would be thought of a chemiſt who ſhould aſſert that the *Arbor Dianæ* pre-exiſted in a maſs of amalgam of ſilver, becauſe, when a weak ſolution of ſilver was poured on it, a little tree ſeemed to ſpring out of it.—One ought to be aſhamed of waſting much time in the refutation of an aſſertion, of the falſity of which any unprejudiced perſon, who is not altogether unaccuſtomed to obſervations of the kind, may convince himſelf, every ſpring.

"Whoever has taken the trouble accurately to examine the ſpawn of the frog, muſt confeſs, that the idea of demonſtrating the little black points it contains to be ſo many completely formed tadpoles, reſembles Brother Peter's method of reaſoning, in the *Tale of a Tub*, where he demonſtrates to his brothers, that a brown loaf is a piece of excellent

ſhape, may be eaſily removed; but a more weighty objection made againſt this theory is that which relates

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roaſt mutton.—But the abettors of the theory of organized germs have gone a ſtep farther in ſupport of their opinions. They refer to caſes where even young girls, in all their maiden chaſtity, have become pregnant, from the untimely and premature evolution of one of theſe organized germs.

"The concurrence of facts is ſometimes moſt wonderful. It happened, that in the very ſame year, in which Swammerdam announced his diſcovery in the ſpawn of the frog, a caſe was publiſhed in the *Ephem. rerum nat. curioſ.* delivered to the ſociety by a celebrated court-phyſician of thoſe times, Dr. CLAUDIUS, which exactly ſuited, as a confirmation of Swammerdam's opinion.—A miller's wife was delivered of a little girl, whoſe belly ſeemed of an unuſual ſize. Eight days afterwards this big-bellied child was ſeized with ſuch violent pains and reſtleſſneſs, that every one who was preſent thought that it could not outlive the next inſtant. The ſick infant, however, in the mean time, actually bore a well-formed, elegant, lively little daughter about the ſize of one's middle finger, which was regularly baptized. During the time, and after the birth, the waters, placenta, and all other impurities were duly diſcharged; but both the little mother and daughter died early on the following day!!!"—(Prof. Blumenbach ſays, in a note ſubjoined to this account, that he has made uſe of the very words of a contemporary phyſician, Dr. OTTO, who was conſulted by the grandmother (the miller's wife) during her pregnancy. His nephew has vindicated and illuſtrated the whole hiſtory in a moſt learned and ingenious manner: '*D. C. J. Aug. Ottonis Epiſtola de fœtu puerpera, ſive de fœtu in fœtu.*' Weiſſenfels, 1740, 8vo.)

"Baron

relates to the reſtoration of parts loſt from the body, and which appears to be irrefutable. Beſides theſe conſiderations, many arguments may be produced to ſhew the futility of that doctrine.

"More probable than the former, unqueſtionably is the theory of *gradual formation* *: according

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"Baron von Haller very judiciouſly claſſes this caſe with another from the Tranſactions of the Academy of Sciences at Stockholm, where, on diſſecting a young girl, bones, teeth, and hairs, were found in a tumour of the meſentery. Theſe two caſes he looks upon as principal evidences for the truth of the doctrine of germs pre-exiſting in the mother.

* Another definition of *Epigeneſis* deſerves to be inſerted here, as it is more conciſe, and as its author, Prof. Blumenbach, has not only embraced this doctrine as the moſt rational on a ſubject of ſo myſterious a nature, but has likewiſe been at great pains to elucidate the gradual formation of animate bodies by an additional hypotheſis—his *niſus formativus (Bildungs-trieb)*, or the ſpontaneous effort of Nature in forming homogeneous ſubſtances.—"It is ſuppoſed," ſays he, "that the prepared, but at the ſame time unorganized rudiments of the fœtus, firſt begin to be gradually organized, when it arrives at its place of deſtination, at a due time, and under the neceſſary circumſtances. This is the doctrine of Epigeneſis." And with a view to corroborate this ſuppoſition, the learned Profeſſor makes the following categorical declaration: "*That there is no ſuch thing in nature, as pre-exiſting organized germs; but that the unorganized matter of generation, after being duly prepared, and having arrived at its place of deſtination, acquires a peculiar action, or niſus, which niſus continues to operate through the whole life of the animal, and*

ing to which it is ſuppoſed, that previous to generation there exiſts no real germ, but crude matter only, from which the parts of the organic body are gradually formed. The power by which this formation is accompliſhed, is a certain formative effort pervading all nature, (NISUS FORMATIVUS; *vis plaſtica*, *vis eſſentialis*) manifeſting its activity according to equal and determinate laws, although in a different manner, in the functions of nutrition and generation, as well as in the reſtoration of parts accidentally loſt. It may be ſafely aſſerted, that this is a mere modification of the univerſal power of vitality; if no obſtacle be oppoſed to this plaſtic effort, the young organic body then receives its proper form; but, in the contrary caſe, there ariſe various unnatural ſhapes and monſters. By the influence of climate, aliment, mode of living, and other incidental circumſtances, this effort of Nature may, in the courſe of life, be variouſly modified; nay, it is liable to changes in the very

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that by it the firſt form of the animal, or plant, is not only determined, but afterwards preſerved, and when deranged, is again reſtored. A niſus, which ſeems therefore to depend on the powers of life, but which is as diſtinct from the other qualities of living bodies, (ſenſibility, irritability, and contractility,) as from the common properties of dead matter; that it is the chief principle of generation, growth, nutrition, and reproduction; and that, to diſtinguiſh it from all others, it may be denominated the FORMATIVE NISUS."

I ſhall only add, that this is, at preſent, the prevailing theory in the German Univerſities; though, in reality, it leaves us as much in the dark as any other.

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first crude matter, or in the plastic lymph, by the different constitution of the male semen.—But the principal arguments in favour of the theory of gradual formation are justly derived from the first origin of plants, from the formation of the chick in the egg, and from the reproduction of such parts of the body as have been lost, either by accident or necessity.

CHAP. X.

Of the AFFECTIONS *and* PASSIONS *of the* MIND;—*their relative good and bad effects on Health.*

THE boundleſs ocean does not exhibit ſcenes more diverſified, than the various affections and paſſions of the human mind. They ariſe partly from the mind itſelf, and partly from the various conſtitutions and temperaments of the individual. While no other remedies but rational arguments can influence the mind, the diſpoſition of the body may be changed and improved, by an infinite variety of means.

It is, indeed, principally from bodily cauſes, that many perſons are violently affected from the moſt inſignificant motives, and others are little, if at all, influenced by the moſt calamitous events. It is, for inſtance, obviouſly from a phyſical cauſe, that violent medicines, poiſons, the bite of mad animals, &c. produce timidity, or fits of anger and rage;—that accumulations of black bile in the abdomen make people reſerved, peeviſh, melancholy, and ſtupid. What we wiſh to think, and in what manner to continue the operations of the mind, frequently does not depend upon ourſelves. The thoughts of the ſober are very dif-

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ferent from thoſe of the man in a ſtate of intoxication. A certain diſh, a particular drink, may ſuſpend the powers of reaſon.

The temperament of man is, as it were, the ſource of his mental operations. Affections and paſſions are different one from another in degree only. The former imply the inclination or propenſity to a paſſion; the latter, the realized affections, whether ſimple or compound; or in other words, they conſtitute an actual and perceptible degree of ſenſual deſire or averſion. According to Lord KAIMES, paſſions are active and accompanied with deſires; affections are inactive and deſtitute of paſſion. He alſo diſtinguiſhes between wiſhes and deſires: the former he calls the higheſt activity of the affections. Compaſſion and wiſhes for the better, are in his idea *affections*: pity, and a deſire after what is better, he calls *paſſions*.

Paſſions operate upon the body either ſuddenly, or ſlowly and gradually. Sudden death, or imminent danger of life, may be the conſequence of the former; a gradual decline and conſumption, that of the latter. The paſſions, as ſuch, may be aptly divided into two principal claſſes, thoſe of an agreeable and of a diſagreeable nature. Men of ſtrong imagination chiefly ſuffer from paſſions of the violent kind, while thoſe of more underſtanding, and leſs fancy, are ſubject to ſlow emotions of the mind. Indolent perſons, whoſe ſenſations are dull, are leſs paſſionate, than thoſe who combine

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acute feelings, and a lively imagination, with a clear underſtanding. The greateſt minds are generally the moſt impaſſioned.

All paſſions, of whatever kind, if they riſe to a high and violent degree, are of a dangerous tendency; bodily diſeaſe, nay death itſelf, may be their concomitant effects. Fatal apoplexies have frequently followed ſudden dread or terror. Catalepſy and epileptic fits ſometimes accompany immoderate affliction, or diſtreſſing anxiety. Hypochondriaſis, hyſterics, and habitual dejection, may indeed ariſe from a variety of phyſical cauſes; but they are as frequently generated by the paſſions or ſufferings of the mind alone, in individuals otherwiſe healthy.

Diſeaſes of the mind, after ſome time, produce various diſorders of the body; as diſeaſes of the body occaſionally terminate in imbecility. In either caſe, the malady muſt be oppoſed by phyſical, as well as moral remedies.

It is only by the management of the conſtitution and education of the individual, that the paſſions may be rendered uſeful; for, if uncontrolled and left to themſelves, they affect us as a tempeſt does the ocean, without our being able to counteract their pernicious influence. Since all affections whatever conſiſt in deſire or averſion, they muſt neceſſarily be accompanied with repreſentations of ſo lively a nature, as to induce the individual to perform the correſponding voluntary motions.

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Conſequently the affections muſt alſo be accompanied by *ſenſible* motions within the body, not only by voluntary actions, but by thoſe alſo, which contribute to the ſupport of life, and which are more or leſs violent, according to the degree of the affection. Joy, for inſtance, enlivens all the corporeal powers, and, as it were, pervades the whole animal frame. Hope has nearly a ſimilar effect; and theſe two affections contribute to the preſervation of health and life, more than all the medicines that can be contrived. But of the other affections of the mind, we can, in moſt inſtances, obſerve ſcarcely any other effect, than that of irregular motions, which, not unlike medicines, in a limited degree, and under certain circumſtances, may be occaſionally uſeful. *Hence the dominion over our paſſions and affections is an eſſential and indiſpenſable requiſite to health.* Every individual, indeed, is at his birth provided with a certain baſis of inclinations, and with his peculiar moral temperament: the moſt tender infant, even before he is capable of ſpeaking, diſcovers by his features and geſtures the principal inclinations of his mind. If theſe be foſtered in his ſuſceptible breaſt, they will grow up with him, and become ſo habitual, that the adult cannot, without the greateſt exertion, overcome them by the power of reaſon.

The phyſical ſtate of the body is moſt happy, when the mind enjoys a moderate degree of gaiety, ſuch as is generally met with in healthy and virtuous

tuous perſons. The circulation of the fluids and perſpiration are then carried on with proper vigour; obſtructions are thereby prevented or removed; and by this lively and uniform motion, not only digeſtion, but likewiſe all the other functions of the body, are duly performed.

Joy is that ſtate of the mind, in which it feels extraordinary pleaſure; in which it enjoys a high degree of contentment and happineſs. The activity of the whole machine is enlivened by it; the eyes ſparkle; the action of the heart and arteries is increaſed; the circulation of all the fluids is more vigorous and uniform; it facilitates the cure of diſeaſes in general, and forwards convaleſcence. The different degrees of this affection are, *Gaiety*, *Cheerfulneſs*, *Mirth*, *Exultation*, *Rapture*, and *Ecſtacy*.—Habitual joy and ſerenity, ariſing from the perfection, rectitude, and due ſubordination of our faculties, and their lively exerciſe on objects agreeable to them, conſtitute mental or rational happineſs.

Evacuations which are moderate, a proper ſtate of perſpiration, and all food of an aperient quality and eaſy digeſtion, may be conſidered as contributing to a joyful ſtate of mind. A pure, dry air, and every thing that invigorates the functions of the body, on the well-being of which the ſerenity of mind greatly depends, has a tendency to obviate ſtagnations. Joy farther is more ſalutary, when combined with other moderate affections: and the

various bodily exertions, as well as the employments of the mind, in reflecting upon different objects, are then ſucceſsfully performed.—A moderate degree of joy removes the noxious particles of the body, and in this reſpect is equal, nay ſuperior in ſalubrity, to bodily exerciſe; but exceſs and too long duration of this paſſion attenuate and carry away not only the ſuperfluous, but likewiſe many uſeful fluids, and more than the natural functions can reſtore. Hence, this too violent motion and diſſipation of humours is attended with relaxation and heavineſs; and ſleep alſo is prevented, which alone can re-invigorate the nerves, that have ſuffered from too great tenſion. On this account, the celebrated SANCTORIUS diſſuades perſons from gambling, who cannot control their paſſions; becauſe of the joy which accompanies their ſucceſs, being followed by reſtleſs nights, and great abſtraction of perſpirable matter. Sudden and exceſſive joy may prove extremely hurtful, on account of the great waſte of energy, and the lively vibration of the nerves, which is the more noxious after long reſt. Nay, it may become dangerous, by cauſing expanſion or laceration of the veſſels, ſpitting of blood, fevers, deprivation of underſtanding, ſwooning, and even ſudden death. If we have anticipated any joyful event, the body is gradually prepared to undergo the emotions connected with it.—For this reaſon, we ought to for-

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tify ourſelves with the neceſſary ſhare of firmneſs, to meet joyful as well as diſaſtrous tidings.

Laughter is ſometimes the effect or conſequence of joy; and it frequently ariſes from a ſudden diſappointment of the mind, when directed to an object which, inſtead of being ſerious and important, terminates unexpectedly in inſignificance. Within the bounds of moderation, laughter is a ſalutary emotion; for, as a deep inſpiration of air takes place, which is ſucceeded by a ſhort and frequently repeated expiration, the lungs are filled with a great quantity of blood, and gradually emptied, ſo that its circulation through the lungs is thus beneficially promoted. It manifeſts a ſimilar effect on the organs of digeſtion. Pains in the ſtomach, colics, and ſeveral complaints that could not be relieved by other means, have been frequently removed by this. In many caſes, where it is purpoſely raiſed, laughter is of excellent ſervice, as a remedy which agitates and enlivens the whole frame. Experience alſo furniſhes us with many remarkable inſtances, that obſtinate ulcers of the lungs and the liver, which had reſiſted every effort of medicine, were happily opened and cured by a fit of laughter artificially excited.

Hope is the anticipation of joy, or the preſentiment of an expected good. It is attended with all the ſavourable effects of a fortunate event, without

poſſeſſing

poſſeſſing any of its phyſical diſadvantages; becauſe the expectation of happineſs does not affect us ſo exceſſively as its enjoyment. Beſides, it is not liable to thoſe interruptions, from which no human pleaſure is exempt; it is employed principally with ideal or imaginary objects, and generally keeps within the bounds of moderation; laſtly, the ſenſe of happineſs contained in hope far exceeds the ſatisfaction received from immediate enjoyment, conſequently it has a more beneficial influence on health than good fortune realized. Although hope is, in itſelf, merely ideal, and preſents its flattering and embelliſhed images to the fancy in a borrowed light, yet it is, nevertheleſs, the only genuine ſource of human happineſs. Hope, therefore, is the moſt favourable ſtate of mind to health, and has freqtiently preſerved the ſerenity and prolonged the exiſtence of thoſe, whoſe ſituation appeared to be forlorn.

Love, viewed in its moſt favourable light, preſents to us a picture of permanent joy, and is attended with all the good effects of that paſſion. It enlivens the pulſations of the heart and arteries, promotes the operations of the different functions of the body; and it has frequently been obſerved, that a ſtrong attachment to a beloved object has cured inveterate diſorders, which had reſiſted all medicinal powers, and which had been conſidered incurable. The changes which this paſſion can effect on the powers and the whole diſpoſition of

the mind, are equally remarkable. For the extraordinary exertions, made to obtain poſſeſſion of the object of our wiſhes, excite a ſenſation and conſciouſneſs of ſtrength, which enables man not only to undertake, but alſo to perform the greateſt achievements. In that exalted ſtate, he ſets all difficulties at defiance, and ſurmounts every obſtacle.

Sorrow is the reverſe of joy, and operates either ſuddenly or ſlowly, according as the cauſe of it is of greater or leſs importance and duration. The loweſt degree of it is called *Concern*;—when it ariſes from the diſappointment of hopes and endeavours, it is *Vexation*;—when ſilent and thoughtful it ſettles into *Penſiveneſs* or *Sadneſs*;—when it is long indulged in, ſo as to prey upon, and poſſeſs the mind, it becomes habitual, and grows into *Melancholy*.—Sorrow increaſed and continued, is called *Grief*;—when toſſed by hopes and fears, it is *Diſtraction*;—when all theſe are drowned by ſorrow, it ſettles into *Deſpair*.—The higheſt degrees of ſorrow are called *Agonies*.

Sorrow ſeldom proves ſuddenly fatal; for, though it injures the nervous energy, it does not haſten the circulation of the blood, with the rapidity of other paſſions, but rather retards its courſe. Yet there are examples of its ſpeedy and fatal effects.—Not unlike a ſlow poiſon, ſorrow corrodes the powers of mind and body; it enfeebles the whole nervous ſyſtem; the heart beats

ſlower; the circulation of the blood and other fluids becomes more inert; they frequently ſtagnate in their channels, and generate evils more ſerious than ſadneſs itſelf. Farther, the face at firſt turns pale, then yellow and tumid; the body and mind are worn out; the courſe of the blood through the lungs muſt be aſſiſted by frequent ſighing; the appetite and digeſtion become vitiated; and thus ariſe obſtructions, hyſteric and hypochondriacal complaints, and, at length, conſumption, which is inevitable deſtruction to the body, frequently in the prime of life, and in ſpite of the healing art. Perſons who indulge themſelves in peeviſhneſs, very ſoon loſe their appetite, together with the power of digeſtion; their mouth has a bitter taſte; flatulency, colic, ſpaſms, faintings, and the long liſt of ſtomachic complaints neceſſarily follow. Men become ſubject to the blind hemorrhoids; and women to ſuppreſſion or other irregularities of the menſes, coſtiveneſs, or chronic diarrhœa. The bile, on account of the retarded circulation, either grows hard and produces indurations of the liver, or it is mixed with the blood, and generates jaundice or dropſy. Such perſons in time become very irritable and peeviſh; and with the frequent return of grief, the mind, at length, is totally employed in contemplating its wretched ſituation, ſo that it finds new food for increaſing it in almoſt every object it beholds. Hence the whole imagination is by degrees obſcured,

and the moſt uſual conſequences of it are, the deepeſt melancholy—ſucceeded either by a nervous fever, or inſanity—ſometimes cancer, and at other times a ſpeedier diſſolution, by what is then called *a broken heart*.

Solitude and idleneſs are not only the remote cauſes of many paſſions, but alſo ſupport and foſter them, without exception: they collect and fix the attention of the mind on the favourite objects, and make us reflect the more keenly on the cauſes of the paſſions, the leſs we are interrupted in theſe fond reveries, by other ſenſations. Though it is certain, that it is not in our power to avert grief, from which even ſages and heroes are not always exempt, yet we can do much to alleviate it, by denying ourſelves the enjoyment which this indulgence in certain ſituations affords. Moral arguments of conſolation, if properly adapted to the capacity and mental diſpoſition of the ſufferer, have in theſe caſes generally a powerful influence. Thoſe whoſe minds are affected by ſorrow, ought to avoid as much as poſſible the company of perſons, who are fond of relating their calamities, and recounting their misfortunes. On the contrary, whatever has a tendency to cheer the mind, and to divert it from diſagreeable objects, ought to be inſtantly reſorted to. Of this nature are, company, buſineſs, cheerful muſic, and the ſocial affections.—The body ſhould be frequently rubbed with dry cloths, perfumed with amber, vinegar,

ſugar,

ſugar, and the like; the lukewarm bath may be employed with great advantage; and, if circumſtances permit, the patient ſhould remove to a warmer and drier climate.—If temperately uſed, a weak and mild wine is of excellent ſervice, but an immoderate indulgence in wine may diſorder the ſtomach, by the quantity of acid it produces.

Weeping generally accompanies ſorrow, if it be not too intenſe: tears are the anodynes of grief, and ought not to be reſtrained by adults. We feel in weeping an anxiety and contraction of the breaſt, which impedes reſpiration; probably, becauſe then a ſuperfluous quantity of air is contained in the lungs, which is forcibly expelled by ſobbing. By this obſtruction in breathing, the blood, which ought to be reconducted from the head, accumulates in the lungs, and conſequently in the veins: hence ariſe redneſs, heat of the face, and a flow of tears, which are regulated in quantity by the degree of ſadneſs that produced them. Their principal good effects are, their preventing the danger to be apprehended from grief, by diminiſhing the ſpaſmodic motions in the breaſt and head, and by reſtoring regularity in reſpiration, as well as in the circulation of the blood: hence perſons find themſelves much relieved after a plentiful flow of tears, which however are extremely prejudicial to the eyes.

Grief ariſing from an ungratified deſire of returning home and ſeeing our relations, is pro-

ductive of a diſeaſe very common among the Swiſs, and which ſometimes, after a ſhort ſtate of melancholy, trembling of the limbs, and other ſymptoms apparently not very dangerous, hurries the unhappy ſufferer to the grave, but more frequently throws him into a conſumption, and generates the moſt ſingular whims and fancies. Perſuaſions, puniſhments, medicines, are here of no ſervice; but a ſuddenly revived hope, or gratification of the patient's wiſhes, have a powerful effect; provided that an incurable conſumption, or inſanity, have not already taken place.

There is alſo a ſingular hyſteric or nervous fever, which affects many unfortunate ſufferers in mental diſorders, and which was firſt accurately deſcribed by RICHARD MANNINGHAM. Debilitated perſons, and thoſe of great ſenſibility, of both ſexes, after melancholy affections and other exhauſtions of ſtrength, are particularly ſubject to this diſorder. It begins with irregular paroxyſms, and manifeſts itſelf by an undefinable indiſpoſition, a dry tongue without thirſt, anxiety without a viſible cauſe, want of appetite, a low, quick, and unequal pulſe, a pale and copious urine, occaſional ſenſations of cold and ſhivering, ſometimes clammy ſweats, ſometimes colic, ſleepleſſneſs, and inſanity. According to the experience of Manningham, this fever generally terminates, in the courſe of thirty or forty days, by faintings, ſilent reveries, and death; unleſs it be removed in the beginning, by bracing and ſtrengthening remedies.

Among the mournful paſſions we may alſo include an *extravagant degree of love*, or ſuch as tranſgreſſes the bounds of reaſon. It is then no longer a pleaſure, but a diſquietude of mind, attended with the moſt irregular emotions; it diſorders the underſtanding; gradually conſumes all the vital powers, by a ſlow fever; prevents nutrition, and reduces the body to a ſkeleton. All the paſſions, indeed, may in their more violent degrees occaſion a depravation of the underſtanding; but ſorrow and love are peculiarly calculated to produce ſo fatal an effect. This mental diſorder, to which both ſexes, but eſpecially women, are ſubject, ſhould be oppoſed in time, by phyſical as well as moral remedies.—Much may be done here by education, and a proper choice of ſociety. The imagination ſhould be withdrawn from ſuch images, as may encourage inordinate and exceſſive love; and it cannot be denied, that young females particularly are frequently precipitated into this weakneſs, merely by reading improper novels. This imbecility of mind becomes the more dangerous in young people, as it is generally increaſed by ſolitude, and their ignorance of the real world.—Exalted ideas of virtue, of magnanimity, and a generous ſelf-denial, are excellent antidotes; but, if the body ſink under the weight of paſſion, even theſe exertions are inſufficient to ſupport the energy of the mind. The phyſical remedies to be reſorted to in theſe ſituations are, rigid temperance, a fru-

gal and leſs nouriſhing diet, conſtant employment, and much exerciſe; but the moſt ſucceſsful of all, is a happy marriage.

Of all the paſſions that can aid the medical art, there is none from which we may expect greater benefit, than from a rational gratification of love. On the contrary, a too ardent paſſion is attended with the moſt dangerous phyſical conſequences: it is nearly related to diſappointed love, and uſually ſhews itſelf by a reſerved melancholy, a general diſtruſt, and a gloomy miſanthropy, which, however, externally appears only under the character of laſſitude and depreſſion. It is apt to be followed by a ſuppreſſion of the menſes, conſumption of the lungs, and even inſanity.

Diſappointed love is extremely detrimental to health, and gradually deſtructive of the body; it ſometimes produces *furor uterinus* in females of an iraſcible temper and romantic turn of mind, unleſs the paſſion itſelf be radically cured.

The moſt dangerous effect of love is *jealouſy*;—this pitiable paſſion, like diſappointed love and pride, is very liable to terminate in madneſs *.—In ſanguine temperaments, the exceſs of this affection is productive of conſequences moſt prejudicial

* In the houſes appropriated to the unhappy victims of inſanity, we generally meet with three different claſſes. The firſt conſiſts of men deprived of their underſtanding, by pride; the ſecond of girls, by love; and the third of women, by jealouſy.

to

to the body; their fluids are impelled to a more rapid circulation, and ſecrete, with preternatural velocity, that valuable fluid which ſtimulates them to venery. Such perſons are much addicted to eaſe, pleaſure, and every ſpecies of gratification, which ſuits their irritable nerves: their ſkin and muſcles being ſoft, and acceſſible to every ſtimulus, and their fluids thin and rarefied, it may be eaſily conceived, that their humours circulate with rapidity to the parts of generation, and that their nerves are thus conſtantly excited to deſire. The dreadful conſequences are but too frequently viſible in young perſons, whether ſingle or married, who have too early indulged in ſuch exceſſes. Hence originate, *tabes dorſalis*, waſting of the limbs, ſpitting of blood, pulmonary conſumption, hectic fever, and the whole train of undefinable nervous diſeaſes, ſo called for want of more proper names; beſides a hoſt of other diſorders, moſtly incurable.

In order to prevent, or at leaſt to oppoſe, the torrent of theſe and ſimilar paſſions, man muſt not only be ſeriouſly appriſed and convinced of his danger, and the dreadful miſery attendant on intemperance and exceſs, but he muſt alſo ſubmit to a ſtrictly temperate mode of life, if he aſpire to riſe to the dignity of his nature, and above the rank of the lower animals. He is a rational being, though his ſenſitive faculties every where remind him of his animal nature. Hence

the following rules cannot be too rigidly adhered to: a conſtant and uſeful employment; ſalutary exerciſe of the body, till it be moderately fatigued; temperance in eating and drinking; abſtinence from ſtrong and heating food and liquors; avoiding the habits of effeminacy, ſolitude, and too much reſt; and laſtly, a ſtrict attention, from early youth, to the moſt rigid modeſty and purity of manners.

Envy ariſes from ſelf-love or ſelf-intereſt, particularly in ſuch individuals as have neglected to cultivate their own talents, or to whom Nature has denied certain qualifications of body or mind, which they cannot avoid ſeeing in others: it is principally excited, when they are witneſſes of the proſperity of perſons who poſſeſs ſuch ſuperior endowments. People of a narrow mind, and thoſe of a confined education, are moſt ſubject to this mean paſſion. Envy deprives thoſe addicted to it of an appetite for food, of ſleep, of every enjoyment, and diſpoſes them to febrile complaints; but in general it is hurtful to thoſe only who brood over and indulge in this corroſive paſſion. For the world contains vaſt numbers, who ſhow their envy at almoſt every event productive of good fortune to others, and who yet often attain a very great age. Joy at the misfortunes, or the diſcovered foibles of others, ſelf-love, calumny againſt their neighbours, ſatire and ridicule, are the never-failing

reſources

reſources of their malignant diſpoſitions. Medicines cannot cure a diſeaſe ſo odious; education and improvement of morals are its only antidotes. Envious perſons commonly give too much importance to trifles: hence they ought to be inſtructed to employ themſelves in more uſeful purſuits; to judge of things according to their true value, and to accuſtom themſelves to a philoſophic calmneſs; they ought to learn how to overcome, or at leaſt to moderate, their ſelfiſhneſs; to counterbalance their expectations with their deſerts, and to equal or ſurpaſs others, in their merits rather than in their pretenſions.

Fear, or *anxiety*, is the apprehenſion of evil. Fear weakens the powers of the mind, relaxes and congeals every part of the human body, retards the pulſe, hinders reſpiration, obſtructs the menſes, ſometimes alſo perſpiration; hence it produces tremor and dread; frequently too it excites perſpiration, ſince it diſorganizes every thing linked to the body by means of the nerves. It is apt to occaſion diarrhœa, and, in ſome individuals, an involuntary diſcharge of ſemen. Some perſons of a relaxed habit are, by great fear, thrown into a perſpiration reſembling the agonies of death; and others cannot retain their urine. Timorous perſons are more readily infected by epidemical diſorders than thoſe poſſeſſed of courage; becauſe fear not only weakens the energy of the heart, but at the ſame time promotes the abſorption of the ſkin, ſo

as

as to render the timid more liable to contagion. In ſhort, fear increaſes the malignity of diſeaſes; changes their natural courſe; aggravates them by a thouſand incidental circumſtances, ſo that they reſiſt all remedies; and ſuppreſſes the efforts of Nature ſo as to terminate in ſpeedy diſſolution. The uſual conſequences of violent and ſuperſtitious fear, produced by a diſordered imagination, are eruptions in the face, ſwellings, cutaneous inflammations, and painful ulcers. In ſome inſtances, too, fear has produced palſy, loſs of ſpeech, epilepſy, and even madneſs * itſelf.

Baſhfulneſs is an inferior degree of fear, which retains the blood in the external veſſels of the breaſt, and the whole countenance. Hence, in females of a delicate conſtitution, and tranſparent ſkin, we obſerve the bluſh not only overſpread the face but alſo the boſom. If carried to a greater degree, it is attended with dangerous conſequences, particularly in the individuals before-mentioned: it may ſtop the flux of the menſes and prove fatal, if an attack of a fever ſhould accelerate the cataſtrophe.—A very high degree of baſhfulneſs may generate a dangerous fever, even in men; though,

* One inſtance of this effect I have myſelf witneſſed, in a gentleman, now living in Edinburgh, who was at Liſbon in the awful earthquake of 1755; and who, from the great fright which ſeized him upon ſeeing whole ſtreets and churches tumble down before him, has been deprived of his underſtanding ever ſince.

from

from modern education, inſtances of this latter kind become every day more rare. An extravagant degree of baſhfulneſs cloſely borders on fear: if it does not proceed from vice or corrupted manners, it may be corrected by ſocial intercourſe with perſons of a cheerful diſpoſition.

Terror, or the dread of an evil ſurpriſing us, before we are able to prevent it, is of all paſſions the moſt deſtructive, and the moſt difficult to be avoided, becauſe its operation is unforeſeen and inſtantaneous. To ſhun all occaſions that may produce it, is perhaps the only remedy. Perſons who are feeble and poſſeſſed of much ſenſibility, are moſt ſubject to terror, and likewiſe moſt affected by it. Its effects are, a ſudden and violent contraction of almoſt every muſcle, that ſerves to perform the voluntary motions. It may farther occaſion polypous concretions of the heart, inflammations of the external parts of the body, ſpaſms, and ſwoons; at the ſame time, it may ſtop ſalutary evacuations, particularly perſpiration and hemorrhages; it may repel ulcers and cutaneous eruptions, to the great detriment of health, and danger of life. The menſes are ſometimes inſtantaneouſly ſuppreſſed: palpitation of the heart, trembling in the limbs, and in a more violent degree, convulſions and epileptic fits, or a general catalepſy, and ſudden death itſelf, are the ſubſequent effects of terror.

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As terror quickly compels the blood to retreat from the ſkin to the internal parts, it forcibly checks the circulation of all the fluids. If anger accompany terror, there not unfrequently ariſe violent hemorrhages, vomiting, and apoplexy. Terror has been known ſuddenly to turn the hair grey.—An inattentive and injudicious mode of educating children often lays the foundation of this infirmity, which is difficult to be eradicated at a more advanced age. Perſons under the influence of this paſſion, ſhould be treated like thoſe who ſuffer from any other ſpaſmodic contraction. Tea, a little wine, or ſpirits and water may be given to them; vinegar, lavender-drops, or ſpirits of hartſhorn, may be held to the noſtrils; warm bathing of the feet, and emollient injections may be of advantage; and, laſtly, the different evacuations ought to be promoted;—but, above all, the mind ought to be duly compoſed.

Anger ariſes from a ſenſe or apprehenſion of ſuffered injuſtice, and an impetuous deſire of revenge. Its different degrees depend upon the impreſſions made by the injury, or the ardour of the diſpotion to vengeance. In the former caſe, namely, when the ſenſe of injuſtice is the prevalent feeling, anger affects us like terror, and produces ſpaſmodic contractions and ſtagnations in the liver and its veſſels, ſometimes ſo conſiderable as to change the bile into a concrete maſs; from this cauſe alone often

often arise the gravel and stone of the bladder. The more usual consequences of anger, if joined to affliction, are paleness of the face, palpitation of the heart, faltering of the tongue, trembling of the limbs, and jaundice.

If, on the contrary, the hope of revenge be the predominant feature in anger, violent commotions take place in the whole system; the circulation of all the fluids, as well as the pulsations of the heart and arteries, are perceptibly increased; the vital spirits flow rapidly but irregularly through the limbs; the muscles make uncommon efforts, while some appear almost palsied; the face becomes red; the eyes sparkle; and the whole body feels elated and inclined to motion. This species of anger is by far the most common.

Anger and terror are, therefore, particularly injurious to the tender bodies of infants, who are possessed of extreme sensibility, easily affected, and consequently much exposed to these passions, on account of the proportionably greater size of their nerves, and their inability to restrain passion by the influence of reason. They are liable to be so severely affected, that they may die suddenly in convulsions, or retain during life an imbecile body and mind, liable to be terrified upon the slightest occasion. When children are apt to cry in sleep, when they start up and make motions indicating fear or terror, it must not be always ascribed to actual pain, but frequently to dreams, which fill their young

young minds with terrible images, eſpecially if they have often been frightened while awake. All parents know how much ſome children are addicted to anger and malice, and how difficult it is to ſuppreſs the ebullition of theſe paſſions. Hence we ought to beware of giving the moſt diſtant encouragement to ſuch deſtructive emotions. For it is certain, that both men and women of an iraſcible temper generally die of a conſumption of the lungs.

Perſons of an irritable diſpoſition are more frequently expoſed to anger than others; they are more eaſily affected by every paſſion. Hence the tendency to anger is particularly viſible in individuals troubled with hyſterics and hypochondriaſis, as well as in debilitated and diſappointed men of letters. Perſons of a hot and dry temperament, of ſtrong black hair, and great muſcular ſtrength, are likewiſe much ſubject to fits of anger.

A moderate degree of this paſſion is frequently of advantage to phlegmatic, gouty, and hypochondriac individuals, as it excites the nerves to action; but, if too violent and raging, it diſſipates the more volatile part of the fluids, and is productive of the moſt hurtful conſequences. In the epileptic, ſcorbutic, choleric, and ſuch as have open wounds, it cauſes fever, ſpitting of blood, convulſions, inflammations, throbbing pains in the ſide, jaundice, apoplexy, &c.

No

No fluid is more affected by anger than the bile, which by its violent influx into the *duodenum* produces a fixed ſpaſmodic pain in the region of the navel, flatulency, vomiting, a bitter taſte in the mouth, anxiety and preſſure about the pit of the ſtomach, and, at length, either obſtructions or diarrhœa.—Wine, or other heating liquors, drank immediately after a fit of anger, and ſtrong exerciſe or labour, are attended with conſequences ſtill more pernicious, as are alſo emetics, laxatives, and blood-letting.

The propenſity to anger is increaſed by want of ſleep, by heating food and drink, bitter ſubſtances, much animal food, rich ſoups, ſpices, and by all things that have a tendency to inflame the blood. Perſons ſubject to this paſſion ſhould uſe diluent, acidulated, and gently aperient drink, and obſerve in every reſpect the moſt rigid temperance. Such perſons ought to ſleep more than others; and employ the lukewarm bath, gentle cathartics of cream of tartar or tamarinds, fruit, butter-milk, whey, vegetable aliment, &c.

Among other arguments againſt anger, young people, eſpecially females, ſhould be informed, that beſides the phyſical dangers attendant on this paſſion, it deforms the face, and, like all the impetuous emotions of the mind, deprives the paſſionate of every charm, and induces a ſtrong averſion to ſuch companions. Thoſe who feel the approach of anger in their mind, ſhould, as much as poſ-

ſible, divert their attention from the objects of provocation; for inſtance, by reciting a paſſage they have learnt by heart; or, as Julius Cæſar did, by repeating the Roman alphabet.

Inward fretting, in which ſadneſs is combined with anger, is the more deſtructive, that it does not vent itſelf in words, or external actions. There may ariſe from it giddineſs, inclination to vomiting, ſudden pain in the ſide, great anxiety, and ſimilar complaints. Somewhat related to this infirmity is, what Dr. WEIKARDT, a German author, calls the "*mal de cour;*" a cruel malady, which comprehends anger, avarice, envy, and ſadneſs.—From a ſenſe of neglect and unmerited injury, whether real or imaginary, which torments courtiers, the habitual peeviſhneſs of a great proportion of men leads them to avenge their diſappointment, by oppreſſing and ill-treating their dependants. To accuſtom themſelves to conſider the phyſical and moral viciſſitudes of life, and the periſhable nature of all terreſtrial happineſs, with becoming firmneſs, and to enlarge their minds by the acquiſition of uſeful knowledge, are the beſt remedies for this mental diſeaſe.

When ſadneſs or fear have ſo overpowered the heart and the underſtanding, that all hopes of averting the apprehended evils are extinguiſhed, the mind ſinks into *Deſpair*. We then ſee no comfort in futurity, and our ideas of approaching miſery become ſo intolerable, that we think our-

ſelves

ſelves incapable to ſuſtain it, and ſeek no other remedy but death. There are attacks of deſpair, and an inclination to ſuicide, in which people are, upon any unforeſeen event, ſuddenly deprived of their underſtanding, and reduced to temporary inſanity. This precipitate ſpecies of deſpair more nearly reſembles terror. Others are ſolitary and reſerved; continually brooding over their misfortunes, till at length all their hopes and reſolution fail. Their deſpair, conſequently, is more nearly allied to melancholy, than any other paſſion.

A ſudden fit of deſpair is owing to very irritable muſcular fibres, which are quickly excited to the moſt irregular motions, and from which ariſes confuſion in the ſenſes and the imagination. In profoundly thoughtful and melancholy individuals, the ſolid parts are weakened, the fluids become thick, heavy, and ſtagnating; and this weakneſs of the ſolids gives them a ſenſation of peculiar debility. They are diſpirited and dejected; their ſtagnating, or, at beſt, ſlowly circulating fluids, occaſion in them a ſenſe of anxiety and timidity; whence gloomy repreſentations are but too eaſily impreſſed on their mind. This is very apt to be the caſe with perſons who eat more animal than vegetable food, which produces very rich and ſubſtantial blood. From this ſource ſome authors derive the choleric diſpoſition of the Britiſh in general; but I have endeavoured to prove, in the

fifth Chapter, on Food and Drink, p. 310 and foll. that this obſervation cannot be maintained on rational principles, and that it is inconſiſtent with actual experience. It is alſo ſaid of the Negroes, that they are more ſubject to melancholy, and even to ſuicide, becauſe their blood is more compact, florid, and ſubſtantial, than that of the Europeans.

The ambitious are likewiſe frequently ſeized with this affection, when they meet with any thing to give them offence or obſtruct their projects. Prodigals, and thoſe who are ſtrangers to the troubles and difficulties of life, are ſubject to fits of deſpair, whenever they are reduced to a ſtate of adverſity. Too rigid conceptions of virtue have alſo, though ſeldom, been the occaſion of this infatuated paſſion. The cautions and rules for preventing deſpair and ſuicide are the ſame which muſt be employed to counteract ſuch other paſſions as depreſs the ſuffering mind; but they muſt be modified according to the temperament of the individual; and the cure of ſuch evils ought to be directed principally to the body, and partly alſo to the mind.

Nothing, indeed, is better adapted to protect us againſt all the uneaſy and turbulent emotions of the mind, than a temperate and active life: as, on the contrary, intemperance unavoidably occaſions irregular commotions in the fluids, and may be the ſource of diſeaſe and imbecility. Hence PYTHAGORAS

PYTHAGORAS adviſed his pupils to abſtain from animal food, which excites wrath, with all the other paſſions and deſires. Idleneſs and want of exerciſe are not leſs productive of many malignant propenſities.

It cannot be doubted, that thoſe who, at an early, docile age, combine ſolid principles of virtue with a ſober and active life, and who are by frequent examples reminded of the turpitude and diſadvantages attending violent paſſions in others, will of themſelves repreſs theſe enemies to human life. Yet it is much more difficult to ſuppreſs paſſions that have already made ſome progreſs; in which caſes cenſure and rational remonſtrances are ſeldom availing. To thoſe, however, who have not reached ſuch a pitch of obſtinacy, as to be above taking advice, the following hints may not be unprofitable:

1. To remove, without delay, the object that gave riſe to the paſſion, or at leaſt to deprive it of its nouriſhment, ſo that it may die of itſelf; by going to ſome other place, which preſents a different ſcene.

2. One affection frequently aſſiſts in ſubduing another of an oppoſite nature; ſuch as to inſpire the timorous with courage; the angry, with fear; the too violent lover, with hatred, and ſo forth.—This, however, is ſeldom practicable.

3. Let us direct our thoughts to other objects of purſuit, ſuch as public amuſements, the chace, travelling,

travelling, agreeable company, or other favourite employments of an uſeful and aſſuaſive nature.

4. *Muſic.* Nothing is ſo well calculated to moderate and calm the nerves, to quiet the mind, and to aſſuage the paſſions; provided that the hearer poſſeſs a muſical ear and feeling, and the kind of muſic be adapted to his particular taſte and ſituation. Hence we cannot be too much on our guard in the choice of muſic, as certain kinds of it have a tendency rather to increaſe than to allay the paroxyſm of paſſion.

5. The ſtate of perſpiration deſerves particular attention. For it is confirmed by numberleſs experiments, that paſſions decreaſe in the ſame degree as perſpiration is increaſed, particularly if they be of ſuch a nature as to check inſenſible perſpiration; for inſtance, melancholy, terror, fear, and the like. Indeed, all the different evacuations are beneficial in this caſe. Laſtly,

6. Let us make uſe of no medicines immediately after a fit of paſſion. The moſt adviſable regimen conſiſts in temperance in eating and drinking, eſpecially in abſtaining from hard, indigeſtible food, cold drink, and cold air. We ſhould better conſult our health, after any ſuch emotions, by keeping ourſelves moderately warm, and drinking tea, or ſome ſimilar beverage.

After a very violent paroxyſm of anger, it is ſometimes neceſſary to open a vein, in order to prevent inflammation; or to cauſe the evacuation

of the bile by an emetic; which caſes, however, are to be determined only by profeſſional men.—The ſaliva ſhould not be ſwallowed in ſuch a ſituation; for it is ſuppoſed to have a ſlightly poiſonous quality.—Perſons under the influence of terror ſometimes ſtand in need of a cordial; but the melancholy will find in wine and other ſtrong liquors rather an uncertain remedy, or which, at beſt, is only palliative: and, if immoderately uſed, they muſt neceſſarily promote ſadneſs, as well as every other paſſion, which theſe ſuppoſed anodynes, in the end, always increaſe by their alternately ſtimulating and relaxing effects.

CHAP. XI.

Of the different ORGANS OF SENSE, *and their reſpective functions—Of the ſuppoſed Seat and Operation of the Soul—Motion—Muſcular Action.*

BEFORE we proceed to inveſtigate the peculiar functions of the different ſenſes, it will be uſeful, if not neceſſary, to premiſe a ſhort analyſis of *ſenſation*, or, in other words, of the ſeat and operation of the ſoul.

The ancients imagined the ſeat of the ſoul to be in the ſtomach, becauſe of the acute feeling of this organ, and the multitude of nerves with which it is provided, and by which it is connected with other parts. But it is now univerſally admitted by phyſiologiſts and anatomiſts, that the operations of the mind are carried on principally in the brain; that this is the point of union, in which all the nerves meet, and which is to be conſidered as the aſſemblage of all ſenſations, or the *ſenſorium commune*. The brain is in the moſt immediate connection with the perceptive faculty; and here all the nerves are as it were concentrated into one point.

Prof. SOEMMERING, of Mayence, has lately endeavoured to prove in a very ingenious publication, that the ventricles of the brain properly contain

contain the more immediate cauſe of the various operations of the ſoul; that there is a fluid, or at leaſt a ſubtile vapour, ſecreted from theſe parts, in conſequence of the activity of the mind exerciſed in the ventricles of the brain; and that all the varieties of intellect, in human beings, depend upon the diverſity of the ſtructure of theſe ventricles, and the various ſtates of vigour and mental energy there exerted.

Without attempting to decide upon a queſtion ſo remote from human inveſtigation, I may be allowed to obſerve, that all conjectures reſpecting the ſeat of the ſoul are in reality frivolous and unſatisfactory, until we have aſcertained, in what manner the important functions of the brain, which is intimately connected and thoroughly blended with the nerves, are effected within the cranium; whether this be done by vibrations, by ſecretions of humours or vapours; or by the peculiar manner in which the numerous blood-veſſels are diſpoſed in the brain, ſo as to allow the blood to exert its influence, and to produce all the changes there, by the force and momentum of its own circulation;—all theſe particulars muſt be aſcertained, before we can form a deciſive opinion reſpecting the ſituation of the ſoul.

This much, however, is certain, that one of the principal offices of the nerves conſiſts in communicating to the brain thoſe impreſſions, which are made on the body by external objects. As ſoon

as, by means of this communication, a certain change takes place in the brain, the mind becomes conſcious of it. But every perception muſt be acquired through the ſenſes; becauſe the impreſſions, of whatever kind, muſt previouſly ſtrike the organs of ſenſe, before they can be communicated to the nerves.

Although it be eſtabliſhed and admitted, that the nerves are the medium of all the operations between body and mind; yet no philoſopher has hitherto been able to diſcover the ultimate chain or link by which they are connected, or the exact point in which they meet. Much, however, depends here upon our idea of the mind. It appears, from the contradictory opinions which, from time to time, have prevailed on this intereſting ſubject, that the inquirers have been too much in the habit of evading the materiality of the ſoul; and yet they aſſigned it a certain place of reſidence in the body, which to this day is imagined to be in either one or other part of the brain. I conceive the ſoul to be the primary animating power and the maximum of all powers in the animal body. And why ſhould we heſitate to conſider matter (of the *primary* properties of which we are but little informed) as perfectly ſimple and yet extremely operative?

The mind, then, is probably not confined to any particular part of the body, neither excluſively to the brain, to the ſtomach, nor to the blood; but diſtributed

diſtributed through the whole ſyſtem, always one and the ſame power, ſave that it is ſometimes more, ſometimes leſs concentrated; and, if I may be permitted to ſay ſo, it is a pure, elementary, ethereal agent. In the *brain*, it diſplays its principal energies: here are ſeated conſciouſneſs, the capacity of thinking and judging, memory, and all the higher faculties of the mind. But again, it muſt be obſerved, that different parts of the brain ſeem to contain different faculties; ſo that memory, probably, occupies more the external cruſt, and the power of thinking, the interior ſubſtance of the brain.

With reſpect to memory, it is remarkable, that nervous and epileptic patients are uſually deprived of that faculty, before any other of their mental powers are impaired. Perhaps the efficient cauſe of the diſeaſe has not penetrated the brain deep enough, ſo as to affect the ſeat of the underſtanding and judgment; till at length, with the progreſs of the diſeaſe, the higher powers of the mind become affected.

Even the lower faculties, the emotions of the mind, and the various paſſions, appear to be ſituated in different organs. Thus, the ſeat of terror and anger ſeems to be in the ſtomach, and in the biliary ſyſtem; the more amiable feelings, as philanthropy, compaſſion, hope, love, &c. ſeem to be ſituated in the heart; fear and ſurpriſe, in the

the external ſurface of the head and back; and ſudden pain, in the breaſt.

The next queſtion ariſes, how are theſe powers put in motion? Has the aſſemblage of theſe faculties, or the *ſenſorium commune*, an original and independent capacity of receiving ideas; of forming new ones from its own materials; of being conſcious of theſe internal ſenſations, and of comparing them, ſo as to reproduce others, through itſelf, and from its own origin? I am inclined to anſwer theſe queſtions in the affirmative. For, as ſoon as the ſenſes are ſtimulated, the ſenſation is communicated to the ſenſorium, where it makes a real, corporeal, and ſenſible impreſſion. All this is accompliſhed by means of the nerves, becauſe the nervous energy appears to be more nearly allied to the mind, than any other power. The more frequently, therefore, the ſame ſtimulus and impreſſion is repeated, the more firmly the idea of it is imprinted, and the longer we retain the impreſſion. If the ſtimulus be too violent and permanent, or if an impreſſion of too many objects be at once made on the brain, our nerves experience the ſame relaxation as the chords of an inſtrument, after a ſtrong and repeated tenſion.

Man, when he is without clear conſciouſneſs, and in the moment of confuſion, feels as if his mental powers were palſied, or had ſuffered a temporary ſuſpenſion. In a ſevere diſeaſe, and previous

previous to death, we perceive the ideas of early life vaniſh firſt; we loſe the impreſſions of ſuch ideas on the brain more readily, in proportion to the diſtance of time when they were made, or accordingly as they have been more or leſs frequently repeated. If eventually the patient recover, he may without difficulty obſerve, how progreſſively the ſuppreſſed ideas re-appear in the head, exactly as if they had been ſtored up there, and remained in a latent ſtate, till the ſoul attained ſufficient energy to uſe them.—From this indubitable fact, I am diſpoſed to deduce a ſtronger argument for the immortality of the ſoul, than from any other phyſiological ſource.

The organs by which the ſenſitive powers of the nerves can be excited from without, are called the ſenſes; in contradiſtinction to the *internal* faculties, ſuch as imagination, memory, attention, and the various affections of the mind. The latter we exclude from the preſent inquiry, which is directed to the *external* ſenſes alone. The number of theſe has been hitherto limited to *five*, or, it may be ſaid with more propriety, that they are five modifications of *one* ſenſe.

This univerſal ſenſe, which in a manner forms the baſis of all others, is that of *Touch*. If we abſtract from the difference ſubſiſting in the ſtructure of the organs, the other ſenſes are ſubſervient to that of touch, and little more than a variety or modification of it. All the ſenſes agree in this, that

that they may be improved by exerciſe, or depraved and blunted by neglect: Nature has not formed them to the ſame degree of perfection in every individual. The loſs of one ſenſe is, in general, partly ſupplied by the greater perfection of another; yet it is equally true, that exerciſe and attention are the principal ſources of this improvement.

In the moſt perfect ſtate of our ſenſes, we are liable to be miſled by them into many errors and miſtakes; but the ſenſe of touch or feeling is leaſt liable to deceptions, while that of ſight is the moſt uncertain. The order in which we ſhall conſider the five ſenſes hitherto admitted as being diſtinct from one another, is the following: viz. 1. *Touch*; 2. *Sight*; 3. *Hearing*; 4. *Smell*; and 5. *Taſte*. —Beſide theſe, there are perhaps ſeveral others, which deſerve to be added to that number; ſuch as hunger and thirſt, and the ſenſations peculiar to the different ſexes. If theſe be not admitted as diſtinct from the five others, we may ſtill diſcover a *ſixth* ſenſe in the animal œconomy. And though this additional ſenſe is chiefly manifeſted in diſeaſes, and ſcarcely perceptible in a healthy ſtate of the body, yet its exiſtence is ſo obvious to patients in chronic diſorders, and particularly in palſy, gout, and rheumatiſm, that they are thereby enabled to aſcertain, with wonderful accuracy, not only the preſent ſtate, but alſo to predict the impending changes of the atmoſphere.

Without

Without loſing time in abſtruſe diſquiſitions reſpecting theſe occult ſenſes, I proceed to examine thoſe which are more generally known.

The *firſt*, namely, that of *Touch*, comprehends not only the ſenſation which is excited by any particular impreſſion, but alſo that change which external objects produce on the ſkin, and particularly on the ends of the fingers. It is in the latter, and more limited meaning, that I now conſider the ſenſe of touch. In order to underſtand more clearly the great importance of this ſenſe, I ſhall premiſe a conciſe deſcription of the external integuments of the human body. For there is no doubt, that the ſkin is the medium of all the ſenſes, and, if I may be allowed the expreſſion, it is the moſt unerring guide, and leaſt ſubject to the illuſions of the imagination.

The whole human body is incloſed in certain integuments or covers: they conſiſt of *three* different layers, each of which is wiſely deſigned by Nature for protection, benefit, and ornament. The uppermoſt, that is, the ſcarf-ſkin, or epidermis, is the thinneſt of the three, and is nearly tranſparent. It covers the whole body, both externally and internally, not only the mouth, ſtomach, and bowels, but alſo every cavity and protuberance of the body; as it forms the upper ſkin of moſt of the inteſtines, the lungs, the heart, the liver, the ſpleen, &c. This covering is of great ſervice to the whole frame, by protecting the parts

incloſed

incloſed in it from external injury, by preventing them from growing together internally, and by keeping every thing within the body in its proper ſituation. It is deſtitute of ſenſation, which even children know, ſince they run pins between it, without feeling pain. But it is poſſeſſed of the admirable property, that it is very quickly renewed, after it has been deſtroyed by accident, or by the meaſles, ſcarlet-fever, and ſimilar diſeaſes.

Immediately under this univerſal and uppermoſt covering of our body, there lies a ſecond, reticular, and mucous membrane, which has received from anatomiſts the name of *rete mucoſum*. It is in moſt parts of the body extremely thin, but it grows conſiderably thicker in others, for inſtance, on the heels and the palms of the hand.

This ſecond ſkin deſerves particular attention, as it is the ſeat of the colour in different nations; though the cauſe of this diverſity has not yet been diſcovered:—in the Negroes it is black; in the American Indians nearly of copper colour; and in the Europeans generally white. That the colour of the human body is altogether contained in this ſecond or middle ſkin, is ſufficiently aſcertained; for not only the third or true ſkin of the Negroes is as white as in the Europeans, but the uppermoſt, or ſcarf-ſkin too, though rather of a greyiſh tint, is ſcarcely darker in blacks than in white people; and in the latter alſo the middle ſkin frequently is of a yellowiſh, brown, or blackiſh colour; in which caſe the

the whole external ſkin exhibits a ſimilar appearance.

This variety of colour has led ſome authors to ſuppoſe, that there is a variety in the origin, as well as in the mental capacities of different nations. So palpable an error, however, could not long remain unrefuted: and it is now almoſt univerſally admitted, that there was originally but one ſpecies of man, though diverſified by the climate, the air, the ſun, and the mode of living, which produce all the difference in the colour, as well as in the ſtructure of man. Thus we know that thoſe Americans, who live in the calmer weſtern and mountainous regions, are not of ſo deep a copper-colour as thoſe who are more expoſed to winds and other contingent cauſes; that the inhabitants of the northern bank of the river Senegal are of a diminutive ſize, and of an aſh-colour, while thoſe of the oppoſite bank are black, and at the ſame time tall and robuſt. We farther know, that after ſome generations, the Negroes are bleached, and people of a white colour become black, when the former emigrate to the cold northern, and the latter to the torrid ſouthern climates. This difference is alſo diſcoverable in our climate, where people moving much in the open air and ſunſhine acquire a dark colour, ſomewhat reſembling that of the ſwarthy Portugueſe.

That there may be alſo a colouring ſubſtance in the blood, whether owing to the iron ſaid to be

contained in this fluid, to the bile, or to an excefs of what the old chemiſts called *phlogiſton* (or what would now be termed the want of *oxygen*)—all of which may have a ſhare in the modification of colours, I am much diſpoſed to admit; becauſe the blood, bile, brain, nay the very vermin on the bodies of the Æthiopians, partake of their native colour.

The *third* and innermoſt of the integuments of our body is the true ſkin, or the *cutis vera*, which immediately covers the fat and the muſcles. It is of a compact, interwoven, cellular texture, which is very thick and ſmooth on its upper ſurface, of a white colour in all nations, looſe or pliable on its inner ſurface, and furniſhed with more or leſs fat. It not only poſſeſſes a conſiderable degree of expanſibility, and contractility, but is alſo provided with numberleſs pores. Its thickneſs varies in different individuals. It is traverſed by a great number of fine arteries, interwoven in the form of a net, and which may be exhibited to the eye by injecting them with a red fluid, ſo that the ſkin then has the appearance of being thoroughly coloured. It is likewiſe furniſhed with an equal number of veins, and delicate abſorbent veſſels.

From the many nerves which pervade the true ſkin, it poſſeſſes an uncommon degree of ſenſibility, eſpecially in thoſe parts where we can perceive the *papillæ* of the nerves. Theſe are ſmall protuberances

berances of different figures, of a reticular ſtructure, and a pulpy conſiſtence. In ſome places, as the lips, they are not unlike flakes, though they generally reſemble little warts. Such we obſerve on the points of the fingers and toes, as well as on many of the moſt ſenſible parts of the body, but particularly the tongue. They are moſt viſible on the ends of the fingers in delicate perſons; they can be traced, with the naked eye, by the ſpiral lines terminating almoſt in a point, and are protected and ſupported by nails proceeding from the ſkin which grows over them. It is in theſe papillary extremities, that every external impreſſion is moſt diſtinctly and forcibly perceived, on account of the number of nerves lying almoſt expoſed to view in theſe places.

The ſenſe of touch can be improved, by practice, to an aſtoniſhing degree. There are many examples of blind people having attained ſo great a perfection of this ſenſe, that they could with accuracy diſtinguiſh the difference of coins, of metals, and even of colours, merely by the touch. I myſelf knew a blind man, who had learnt to take a watch to pieces, to clean it perfectly, and to put it together again, without any other aſſiſtance, but that of the inſtruments commonly uſed, and the exquiſite feeling of his fingers.

I have now only to deſcribe the operation or mechaniſm of this ſenſe.—When the nervous papillæ are preſſed againſt external objects, the

nerves receive a kind of vibration, which is communicated to their branches, and thence to the brain. Thus we are enabled to feel the hardneſs, roughneſs, moiſture, warmth, gravity, figure, ſize, and even the diſtance of bodies. But, that this feeling may not become painful, Nature has provided another cover, namely, the ſcarf-ſkin, which ſerves the important purpoſes of ſecluding the air from the true ſkin, and preventing the body from being too much dried.—The nails increaſe the energy of touch, and render the ſenſe of it more acute, as they reſiſt the preſſure of external objects.

The *ſecond* of our ſenſes, though leſs eſſential to animal life, is more conducive to our welfare and happineſs. Without *Sight* we cannot juſtly contemplate the wonders of Nature, and exiſtence is deprived of its greateſt charms. An anatomical deſcription of the eyes would lead us too far from the object of theſe inquiries, and would not be intelligible without a more particular analyſis and demonſtration than our limits allow.

In the ſenſe of ſight, we are far excelled by moſt of the lower animals. Eagles and hawks, in particular, deſcry their prey, when beyond the reach of our ſight, though aided by a teleſcope. Yet in men, alſo, this ſenſe may be wonderfully improved, and I remember to have heard the celebrated *Baron Trenk* aſſert, that during his long captivity in the ſtate-dungeon at Magdeburg, he had ſo much

much improved his ſight, that he could ſee the mice traverſing his gloomy cell in the middle of the darkeſt night—whether this aſſertion was exaggerated, I do not pretend to decide.

The operations of ſight are performed in the moſt accurate manner. By the ſtructure of the eye, no rays of light can paſs into it, unleſs emitted within an angle not exceeding 90 degrees. Every thing here is regulated upon optical principles, ſenſation excepted. This is ſituated in the *retina*, a membrane having the form of a net, and being, as it were, the mirror by which external objects are repreſented to the mind. If this mirror be deſtroyed, as is the caſe in *amauroſis*, or *gutta ſerena*, our ſight is irrecoverably loſt.

All viſion conſiſts in the refraction of the rays of light, by means of the cryſtalline humour, till all the rays are concentrated into one diſtinct image on the retina. The rays of light, while they paſs through the arched ſurface of the *cornea*, or the horny ſkin, are broken and brought in contact with each other; and this is ſtill farther promoted, while they paſs through the more denſe cryſtalline lens. They then converge at the ſpot where the vitreous humour is contained: here they again diverge, once more come in contact, and finally collect in as many points as are repreſented by the external object. This image, which is depicted on, and ſtimulates the retina, is communicated to the mind, and produces the ſenſation of ſight.

It is partly owing to the above-mentioned refraction, partly to the conſtant and uniform reference to the internal ſenſe, that in the act of viſion we ſee objects in an upright poſture before us, though they are properly imprinted on the retina, in an inverted poſture. By this admirable mechaniſm, all objects are invertedly preſented to the eye, ſo that we cannot err in this reſpect, ſince the relation and proportion of things uniformly remain the ſame.

But it will be aſked, how does it happen, that with two eyes, we ſee only one object? This queſtion is eaſily anſwered by thoſe, who inform us, that with two noſtrils we are ſenſible of only one particular ſmell, and with two ears we hear but one diſtinct ſound; that a ſimilar external ſtimulus, in ſimilar nerves, will always produce the ſame internal ſenſation, and that accidental deviations, or diſeaſes only, can affect this principle. Yet the explanation now given is altogether inſufficient, as it proceeds from analogical reaſoning.

If we wiſh to form a clear conception of this faculty, we muſt above all things direct our attention to the *axis* of viſion, or that imaginary line, which we draw in a ſtraight direction from the centre of the eye to the object, and which is prolonged before and behind that organ. We muſt next advert to the ſituation in which the eyes are placed. They do not lie perfectly ſtraight in their ſockets, but ſomewhat in an oblique direction towards

towards the noſe. If, then, we prolong, for a ſhort ſpace only, the axis beyond the eye, we ſhall ſoon find, that the two imaginary lines meet in a certain point. This is called the *Focus*, or the point of viſion—the termination of the external rays of light.

If a perſon be able to ſee to a great diſtance, his lines of viſion interſect each other at a greater diſtance from the eye, and conſequently his focus is farther removed from it. This defect is called *preſbyopia*, or far-ſightedneſs, and may be remedied by means of convex glaſſes; but, if from the too great convexity, or an extraordinary converging power of the eye, the rays of light too ſoon unite in one point, and, as this point is placed before the retina, from whence the rays of light again diverge, viſion becomes indiſtinct, till the object be brought nearer to the eye; in order to place the point of union, as it were, farther behind the eye—this deficiency of viſion is called *myopia*, or ſhort-ſightedneſs, and may be relieved by concave glaſſes. Of theſe, as well as other defects of the eye, and the moſt proper methods of preventing and curing them, I ſhall treat in the next Chapter.

It farther deſerves to be remarked, that the optic nerves croſs each other in the brain, and that we are accuſtomed, from our infancy, to ſee only one object at a time. Hence children ſhould be ſo placed in bed, that they may not learn to

ſquint, or that the eyes may not be directed upwards and outwards, but rather downwards and inwards, in order to habituate them properly to form the axis above deſcribed. That cuſtom has great influence, in this reſpect, is obvious from the circumſtance, that thoſe who ſquint, not unfrequently ſee two objects at once; and that ſuch eyes, as by accident or diſeaſe have become double-ſighted, may, by continued exertions, be again habituated to view objects diſtinctly.

Every one muſt have obſerved, that upon entering ſuddenly from a very dark place into bright ſunſhine, he could ſcarcely ſee any object, felt pain in the eyes, ſhed involuntary tears, or ſneezed. This temporary deprivation of ſight is owing to the pupil of the eye being dilated in a dark place, and contracted again at the approach of light. The dilatation and contraction of the pupil is in proportion to the darkneſs or brightneſs of the place. If the change from a dark to a bright place be inſtantaneous, the pupil cannot dilate and contract quickly enough; it is, as it were, palſied, together with the retina, and we cannot ſee at all. The pain of the eyes, and the flow of tears under theſe circumſtances, muſt be aſcribed to ſimilar cauſes. Every ſtimulus, whether occaſioned by heat, cold, winds, colours, and the like, excites a ſenſation, which is agreeable, if it be moderate and not too long continued; but which becomes painful and diſagreeable, as it increaſes in violence and duration.

There

There remains another curious phenomenon to be explained, namely, that of *ſneezing*, which often takes place, when we ſuddenly go from darkneſs to a ſtrong light. Here the ſame cauſe operates, though under different circumſtances. The optic nerves conſiſt of the ſecond pair of the nerves of the brain; with theſe are united the third pair, the fourth pair, and ſome branches of the fifth and ſixth pair. Yet the ſecond pair, or the peculiar optic nerve, has the moſt important ſhare in viſion. It proceeds from the brain ſtraight to the pupil of the eye, pervades this almoſt through the middle of its poſterior internal part, where it terminates and dilates itſelf, or, as it were, melts into a ſoft, downy ſkin, forming the *retina*, which covers a great part of the poſterior internal eye.—Now, from the fifth pair of nerves there proceeds but one branch into the eyes, while another takes its direction to the noſe. When the eye is ſuddenly impreſſed with the rays of light, that branch of the fifth pair which extends to the eyes, is ſtimulated in common with the other branch of the ſame pair proceeding to the noſe. If the ſtimulus be violent, it is communicated to both branches, that of the noſe is likewiſe ſtimulated, and we are compelled to ſneeze.

To conclude the account of the ſenſe of ſight, I muſt remark, that the repreſentations of the mind ſcarcely diſplay their influence on any other of the

ſenſes, to ſo extenſive a degree, as they do upon this; hence it happens, that we ſometimes imagine we ſee images before us, in the cleareſt manner, though the repreſentation of them be merely a phantom of the brain. The impreſſion forcibly made on the retina, remains there for ſome time, even after the object itſelf has vaniſhed; thus we imagine we ſee a fiery ring, when a burning coal is ſwiftly moved in a circle.—That we believe we ſee many bright colours, when we rub and preſs the cloſed eye with the fingers, is owing to this cauſe, that the ſame kind of effect is produced on the nerves of the eye by friction, as uſually accompanies the view of the colours themſelves. But whether colours, in general, depend on the different degrees of vibration of the air, or on the elements of the rays of light, which, by their diviſion, appear ſingly and diſtinctly in the priſm, is a problem not yet, and which perhaps never will be, ſatisfactorily ſolved.

By the next ſenſe, namely, that of *Hearing*, we perceive the vibrations of the air, which occaſion ſound. For this purpoſe, our ears are formed partly of cartilages, and partly of bones, in order to communicate theſe vibrations to the auditory nerves, and thence to the brain. This ſenſe alſo is more acute in the lower animals, than in the human ſpecies. The hare, for inſtance, is warned againſt approaching danger, by her exquiſitely fine ear; and the owl, being ſenſible of the ſofteſt ſounds,

ſounds, makes uſe of her acute ear to aſſiſt her in the diſcovery of prey.

The warm-blooded animals have an external and an internal ear; but in almoſt every ſpecies it is of a different ſtructure. Moſt animals can move their ears—an advantage not enjoyed by man; though it was not Nature which formed our ears immoveable, but an abſurd cuſtom, continued for many centuries, gradually produced this effect. That the ears were not naturally deſigned to lie flat on the head, is ſufficiently obvious from the number of muſcles with which they are provided, and each of which is deſigned to perform different motions.

The manner in which the ſenſe of hearing is produced, is ſhortly this. The vibrations of the air, which take place by the concuſſion of any elaſtic body, firſt ſtrike the external ear; hence the ſound agitates the *tympanum*. But that the vibrations may not become too violent, and the tympanum may not burſt, as is to be apprehended from a very loud and near ſound, the ear is provided with a ſiphon, which anatomiſts call the *Euſtachian tube*, and through which the air collected on the tympanum again eſcapes. But the vibration of the tympanum is alſo communicated through the four little bones of the ear; it is forwarded through what is called the *ſtapes*, or ſtirrup, to the veſtibule, or the firſt entrance, and through the membrane of the *feneſtra rotunda*, as far as the innermoſt

innermoſt cavity of the ear, which reſembles the ſhell of a ſnail, and is therefore called *cochlea*. The whole labyrinth of the ear being filled with a ſubtile water in ſmall quantity, this fluid gently agitates the ſubſtance of the auditory nerve; in conſequence of which ſound is communicated to the brain. The humour contained in the labyrinth of the ear obviouſly ſerves the purpoſe of preventing the ſoft, pappy ſubſtance of the auditory nerve from being too violently agitated.

The uſe of the cochlea, which is very artificially conſtructed, cannot be eaſily determined; it is probably rather deſigned for the more accurate diſtinction of the varieties of tones, than for the perception of ſounds in general; for we may conſider the delicate nerves, that run along the ſpiral line of this cochlea, as a number of chords growing progreſſively ſhorter, and which, in a manner, repeat the external vibrations of the air, in the internal parts of the ear. This repetition appears to be performed according to a geometrical ſcale, ſince the ſame vibrations of the air take place here in a reduced proportion. Hence ſounds, which are too loud and penetrating, offend our ears, becauſe they ſhake the auditory nerves too quickly and violently, ſo that theſe may even be lacerated, and produce deafneſs; but this is not the caſe, when the tympanum is broken by accident.

Some

Some perſons, who are defective in this ſenſe, are obliged to make uſe of ear-trumpets, and to turn their ear to the quarter whence the ſound proceeds; to place the hand at the ſide of the ear; to open their mouth, or uſe ſome other aſſiſtant means. All this is done with a view to ſupply the motion of the ears, of which we have been deprived by habits contrary to the laws of Nature: theſe motions the lower animals perform, by pointing their ears in the direction from which the ſound proceeds. In this manner, the ear receives a greater proportion of ſound; and many diviſions of it, which might otherwiſe eſcape, are conveyed to the nerves.

By means of the teeth, and other bones of the head, ſounds may be conducted to the auditory nerves, ſo as to communicate the neceſſary vibrations to the internal ear, though we can hear more eaſily and diſtinctly, when the ſound comes through the organ itſelf. There is, however, a method of communicating ſounds to the deaf, with better ſucceſs than by the common ear-trumpets, which inſtruments at length entirely deſtroy that ſenſe. This is effected by means of a cylindrical rod or tube of ivory, or any ſimilar hard ſubſtance; the rod may be from ſix to twelve inches long and upwards, and from a quarter to half an inch in diameter; if it be made hollow throughout, the part which is placed in the mouth between the front teeth ought to have a much ſmaller aperture than

than the other extremity. This tube is well calculated to aſſiſt thoſe deaf perſons, who wiſh to enjoy the muſic of a harp, harpſichord, or other inſtrument. I once knew a gentleman, who was quite deaf, but with the aſſiſtance of a cylinder, ſuch as I have deſcribed, was enabled to hear the ſofteſt notes diſtinctly, and to enjoy all the pleaſures of muſic.

Laſtly, it is a falſe aſſertion, that there is always a hole in the tympanum; for it is owing to the double opening of the Euſtachian tube, that many jugglers can cauſe the liquor they drink to flow out of the ear, in the ſame manner as they diſcharge the ſmoke of tobacco through the noſe and ears.

Our *fourth* ſenſe is that of *Smell*. It is nearly related to the ſenſe of taſte, probably from the great ſimilarity of ſtructure in the organs of theſe two ſenſes, and their vicinity to each other. This is attended with the manifeſt advantage, that man and animals are generally enabled to diſcover, without danger, any unwholeſome food. The functions of this ſenſe are exerciſed by the noſe, and chiefly by the mucous membrane which lines that organ. The whole inſide of the noſe is covered with this membrane, which is a continuation of the general integuments of the body, but much ſofter, more mucous and porous, full of veſſels, exquiſitely ſenſible, and covered with hair towards the lower part of the noſtrils, to prevent any impurities from aſcending too far.

Of

Of all the parts of the mouth connected with the noſe, the moſt remarkable is the cavity of the jaw-bone, or the *ſinus maxillaris*, which extends over the whole breadth of the two upper jaw-bones, and opens itſelf into the noſe between the middle and lower ſhell. In new-born children, all theſe cavities are not yet formed, and this is the cauſe of their imperfect ſmell. In order to moiſten the membranes, which otherwiſe would become too dry, by the air we inhale through the noſtrils, there deſcends a naſal canal from each cavity of the eyes, which communicates with the lower ſhell, in order to conduct the tears continually into the noſe.

If we make an effort to ſmell, we draw up the air filled with the volatile, oily, and ſaline particles of odorous ſubſtances: theſe particles come in contact with the fine branches of the olfactory nerves, which have the capacity of receiving impreſſions, and thus the ſenſation is imparted to the brain. Theſe nerves riſe immediately from the brain, and are larger in many animals than in man. The bigneſs of the nerves, however, is no proof of the greater degree of ſenſation in the animal, or of the ſuperior abilities of the mind. On the contrary, it is now pretty generally believed, that the mental capacities of organized beings are in an inverted proportion to the ſize of the nerves riſing out of the brain, and the medullary ſubſtance of the ſpine. Thus, for inſtance, the amphibious animals

animals have ſtrong nerves, in proportion to their ſmall brain, and yet they are, in general, extremely inſenſible and ſtupid. Lean people, and ricketty children, on the contrary, have very thin and fine nerves to a large brain; and who has not obſerved their ſenſibility of mind, as well as their quick and acute feelings?

But to return from this digreſſion.—The ſaline and oily particles which affect the ſmell, are more volatile and ſubtile than thoſe diſtinguiſhed by the taſte; yet this difference may in a great meaſure ariſe from the nerves of the tongue being covered with thicker membranes than thoſe of the noſe.—In many animals, the ſenſe of ſmelling is more acute than in man, who would probably be much incommoded by too refined a perception of this kind. But it may be much improved by exerciſe, or depraved by neglect. Hence the American Indian can diſcover the footſteps of man and other animals by ſmell alone;—while perſons who live in a bad and fetid atmoſphere, are ſcarcely ſenſible of the difference between the moſt fragrant and offenſive ſubſtances.—It is remarkable, that moſt maniacs and inveterate hypochondriacs are exceſſively fond of ſnuff, and every thing that ſtimulates the noſe.

Of all the quadrupeds we know, the dog excels in the acuteneſs of this ſenſe; and there are many extraordinary inſtances recorded of his peculiar and aſtoniſhing powers of ſmell; with one of which,

as

as well authenticated as it is extraordinary, I ſhall conclude this ſubject.—In the year 1582 *Leonhard Zollikofer* ſet out from his Chateau Altenklingen, in Switzerland, for Paris; the diſtance of which is upwards of five hundred Engliſh miles. A fortnight after his departure, his faithful dog, who had till then been confined, alſo ſet out alone for Paris; where he arrived in the courſe of eight days, and diſcovered his maſter in the midſt of a crowd, after having ſearched for him in vain at his lodgings.

We are now arrived at the *fifth* and laſt of our ſenſes, the *Taſte*, which is ſo diſtinguiſhed a favourite of a great number of perſons, that it appears, as if they wiſhed to live only for the ſake of its gratification. I have in former parts of this work endeavoured to inculcate the propriety and abſolute neceſſity of attending to the effects, produced on this ſenſe by food and drink, without which animal life cannot be long ſupported. In this place, therefore, there remains to be deſcribed only the mechaniſm and the functions of this ſenſe.

The principal organ of taſte is the tongue, which in very few animals is as ſenſible as in man. The former chooſe, indeed, among the herbs upon which they feed, by accurately diſtinguiſhing the uſeful from the noxious plants; but this appears to be more in conſequence of their acute ſmell,

than

than from the guidance of their taſte. To deſcribe the figure and ſhape of the tongue, is not conſiſtent with my plan; but I ſhall briefly obſerve, that this organ is provided with innumerable nerves, which terminate in certain warts, or papillæ, of a different ſize and figure, ſome of them pointed, others oblong, and others fungous.

Theſe nervous papillæ are the peculiar ſeat of the ſenſe of taſte, or the palate. But, to taſte any thing whatever, either the tongue ſhould be moiſt, or the ſubſtance applied to the tongue, ſhould contain moiſture. In aſcertaining the difference of taſte, the little warts are, in ſome degree, dilated: every ſubſtance we can taſte, contains a greater or ſmaller proportion of ſaline and oily particles, which muſt be ſoluble by the tongue. If the ſenſation of the ſaline particles be acrid, the taſte is ſtrong, diſagreeable, and at length becomes painful: this is alſo the caſe, if the tongue, by burning or other accidents, be deprived of any part of the epidermis, or ſcarf-ſkin.

Such bodies as contain no ſaline particles, as pure water, excite no kind of taſte whatever. The difference of taſte cannot be accounted for from the variety of figure in the cryſtals of the different ſalts, but appears to ariſe from the chemical properties inherent in ſaline bodies.—It may be laid down as a general rule, that every ſubſtance, which affords an agreeable taſte to a

healthy perſon of an undepraved palate, is wholeſome: as, on the contrary, ſubſtances of an acrid and diſagreeable taſte are commonly pernicious.

The different degrees of taſte depend on the greater or leſs ſenſibility of the nervous papillæ before deſcribed, as well as on the quality of the ſaliva, in a more or leſs healthy ſtate of the body. If our nerves be blunted and weakened by ſmoking tobacco, by too ſtrong and highly-ſeaſoned food, by the copious uſe of ſpirituous liquors, by age, or other cauſes, we cannot reaſonably expect to poſſeſs the ſame degree of ſenſibility of taſte, as if we had been more attentive to the ordinances of Nature.—The more ſimple our uſual aliment is, the leſs it is ſeaſoned by hot ſpices, and the leſs we ſtimulate the palate by wine and ardent ſpirits, we ſhall the better preſerve our taſte, together with the nerves of the tongue; and we ſhall have a greater reliſh for rich diſhes, when they are but occaſionally preſented to our palate.

The ſenſes, then, are thoſe organs, by means of which the mind perceives or feels external objects. They may be conſidered as the ſatellites of the mind; and although ſome animals enjoy particular ſenſes more acutely than man, yet his ſenſes are more comprehenſive, and he is amply compenſated by the extenſive uſe he can make of them, while the inferior creatures poſſeſs a more intenſive application of their ſenſitive faculties.

We have now conſidered the mode in which the ſenſes operate; we have ſeen that every thing depends upon a nervous ſtimulus, which, by the moſt diverſified organs, is communicated to the mind: there remain to be added only a few remarks and explanations, relative to animal motion, or muſcular action.

The machine of the human body is put in motion by a great diverſity of powers.—Of theſe, the higheſt and moſt energetic is that of the *mind*; the next ſubordinate power is that of the *nerves*, immediately after which follows the moſt operative of the corporeal powers, that is, *muſcular irritability*, or the peculiar faculty of the muſcles to contract, in conſequence of any ſtimulus applied to them. I purpoſely omit in this place, what phyſiologiſts have called the vital power, the peculiar power of life, or BLUMENBACH'S *vita propria*; and the healing power of Nature, or *vis medicatrix naturæ* of the ancient phyſicians. All theſe powers are, in a great meaſure, hypothetical, though their frequent operations in a diſeaſed ſtate of the body cannot be denied. And, as the muſcular powers of men and animals are the moſt obvious to the ſenſes, I ſhall content myſelf with ſtating what has a reference to theſe.

A *muſcle* is a bundle of thin and parallel plates of fleſhy threads or fibres. Theſe are connected by a looſe and generally fat cellular membrane; they

they ſeparate into greater bundles, till at length ſeveral portions of a muſcle lying parallel, or inclining towards one another, are again ſurrounded by a tender membrane of cellular texture, which forms one ſubſtance with the collateral partitions; and theſe, being again ſeparated from the contiguous fleſh, by a ſomewhat thicker cellular texture, are then conſidered as one diſtinct muſcle.

The human body has a conſiderable number of muſcles, yet many of the lower animals are provided with a much greater proportion of them. The caterpillar (*Phalæna Coſſus*, L.) has about 3500 muſcles, while the human body can count ſcarcely 450. The muſcles of animals, in general, are more powerful than thoſe of man. What aſtoniſhing power, for inſtance, is the leaping chafer, or the graſshopper, obliged to employ, in order to make jumps, which extend to ſeveral hundred times the length of their own bodies! Another ſmall inſect, the flea, excels all other animals in its prodigious leaps, and is able to carry a weight 80 times heavier than its body. All theſe apparent wonders are accompliſhed by means of the muſcles. The figure of them, in man, is very irregular; thoſe only, which are deſigned to perform certain *vulvular* motions, ſuch as the muſcles of the mouth, the eye-lids, the bladder, the anus, &c. are of a circular or round figure.

All the muſcles contract in the direction of their fibres; the middle part or the belly of the muſcle

ſwells, hence it gets ſhorter, and both ends approach one another. Moſt of our muſcles operate in the manner of a lever; the two ends of every muſcle, in the extremities of animals, are faſtened to the bones, by means of tendons or ſinews; one of theſe extremities only being moveable, while the other remains fixed. Hence, in the contraction of the muſcles, the moveable bone is drawn according to the direction of their fibres. If a muſcle be contracted, it neceſſarily ſwells in thickneſs, as may be diſtinctly felt by placing the hand upon the *maſſeter*, a muſcle of the lower jaw, and compreſſing the back teeth. As ſoon, however, as the nerve of the muſcle is cut, or tied only, the contracting or ſwelling power inſtantly ceaſes, whence we are inclined to ſuppoſe, that the nerves have the principal ſhare in regulating the powers of contraction, extenſion, and loco-motion. Whether this be done by the influx of a fluid into the nerves, or by ſome other latent power, has not yet been diſcovered.

The energy of muſcular action is remarkable in every healthy individual, but particularly in very ſtrong men, and frequently too in maniacs. With the aſſiſtance of a few muſcles only, they are enabled to raiſe a weight, often much exceeding that of the whole human frame.—In order to ſupport the preſſure of the lever, which is accompliſhed with a great loſs of power, and to preſerve and conſolidate the muſcles in their ſituation, they run

at one time under croſs ligaments, as is the caſe on the fingers; at another time they move in rollers, for inſtance, in the eye; and, again, in other places, they are ſupported in their poſition by the peculiar ſtructure of the bones, as we find on the upper part of the ſhoulders.

If a computation could be made of all the loſſes of power which the muſcles experience, partly by their frequent inſertion at very acute angles, partly by their being extended as a chord, and drawing a weight oppoſite to its fixed point; partly by paſſing over certain joints which break the force to be applied to a particular joint; and, laſtly, by their fleſhy fibres being obſtructed by the angles they make with the tendons;—if all theſe impediments could be reduced to an accurate calculation, we ſhould be aſtoniſhed at the contractile force exerted by the muſcles, as it would exceed any amount of powers raiſed upon mechanical principles. It is confidently aſſerted, that the effect is ſcarcely $\frac{1}{100}$th part of that force which the muſcles employ; and yet a ſmall number of them, the ſubſtance of which is equal in weight to a few pounds only, poſſeſs the power of lifting, or at leaſt moving, ſeveral hundred weight, and this with inconceivable facility and ſwiftneſs. It would be preſumptuous to aſcribe the great loſſes of muſcular power to any defect in the animal œconomy: for, if we had the full uſe of our muſcles, the juſt ſymmetry or proportion of the parts would be deſtroyed, and

it might otherwiſe be attended with many phyſical evils, the conſequences of which we cannot comprehend.

As an ample compenſation for the want of this unneceſſary ſtrength, Nature has provided the upper ends of the muſcles which bend the joints, and chiefly thoſe of the knees, with certain bags, *burſæ mucoſæ*, which contain a lubricating mucus, to facilitate the motion of the tendons. And to this beneficent arrangement we owe the ability of exerciſing the power of the muſcles with ſuch extraordinary activity, and without feeling them rigid and inflexible, after violent and long-continued exerciſe.

Being now acquainted, in ſome degree, with the *nerves* and *muſcles*; it will alſo be neceſſary to ſay a few words relative to the *blood*; eſpecially as the doctrine of *temperaments*, already treated of in the Introduction, was principally founded on the nature of theſe three ſubſtances.

The quantity of blood in a human body of full growth, is generally computed at 30 lb. This liquid apparently conſiſts of two parts only, namely, the *ſerum*, or water, and the *craſſamentum*, or the thick and coagulable part of the blood. But, as the latter can be again ſeparated into two parts, namely, the *cruor*, or the thick and red part, and the coagulable *lymph*, the blood conſequently conſiſts of three principal conſtituents: the ſerum, the cruor, and the lymph. Beſides theſe, there is alſo

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a conſiderable quantity of air contained in the blood, which is, as it were, the medium of combination in all vegetable, animal, and mineral bodies; for, when the air is expelled, whether by combuſtion, fermentation, putrefaction, or any other proceſs, they haſten towards their inevitable diſſolution.

There is further contained in the blood, much water, a ſmall proportion of oil, ſome ſalt, earth, and a little iron, which, together with the heat produced by reſpiration, is ſuppoſed to impart the red colour to that fluid. The red colour is confined to the *cruor*, which conſiſts of very minute red globules, nearly reſembling in ſhape the eggs of ſilk-worms.

Much remains to be ſaid on the properties of the blood, and its wonderful circulation in the human body; but, as this ſubject, from want of room, cannot be ſatisfactorily diſcuſſed here, I am under the neceſſity of concluding this Chapter with the following remark: that the variety of temperaments in man appears to be owing to the different mixture of the fluids, and the diverſified ſtructure of the ſolids, particularly of the nerves and muſcles. This is ſo true, that the whole picture of his phyſical life, together with his moral character, depend chiefly on the various combination of theſe parts. Yet there are different means by which peculiar temperaments are generated;—the

first of these is *climate*, which forms the national character;—the second is a certain *hereditary disposition*, which we derive from our parents;—and the third, is the peculiar *organization* of the individual.

CHAP. XII.

Practical Remarks and Rules relative to the TREATMENT AND PRESERVATION OF THE EYES: *—On the importance of beſtowing proper care on theſe organs—Of Short-ſightedneſs, and the reverſe—General Rules for the Preſervation of the Eyes—Of the Conduct to be obſerved in Weak Eyes—Dietetical Precepts reſpecting the Eyes in general—Some additional Rules addreſſed to thoſe who are obliged to make uſe of Eye-Glaſſes.*

I. *On the importance of beſtowing proper care on theſe organs.*

THERE is ſcarcely any part of the ſenſitive faculties, which contributes more to our phyſical enjoyments, than the unimpaired power of viſion. Hence the management of the eyes deſerves the care and attention of every perſon, who wiſhes to preſerve them in a ſound and perfect ſtate, and to retard, although we cannot altogether avert, the natural conſequences which accompany the advance of years. By our mode of life, this infirmity is much accelerated, and the eyes are weakened and worn out, or at leaſt rendered too irritable. Such is particularly the caſe in thoſe claſſes of people, who are much em-

ployed in ſedentary occupations, who work by candle-light, or are much expoſed to duſt, &c.

The remarks, rules, and obſervations of this Chapter will relate chiefly to the treatment, both of ſound and weak eyes, and occaſionally alſo to the regimen of them in a diſeaſed ſtate.

More accuracy and attention is required in this reſpect, than inexperienced perſons generally imagine. Till of late years, proper attention has not been paid, to lay down and eſtabliſh well-founded and practical rules on the ſubject of the eyes, and their treatment. Some modern phyſicians and oculiſts, however, have uſefully devoted much time and labour to inquiries into the maladies of this organ. The fruits of theſe reſearches, as well as my own experience, on this point, I now proceed to lay before the reader.

II. *Of Short-ſightedneſs, and the reverſe.*

Man probably enjoys his ſight to a later period of life than any of the lower animals, and might preſerve it ſtill longer, if he were better informed reſpecting its preſervation. Thoſe who are naturally ſhort-ſighted, are entitled to expect an improvement of viſion with the advancement of age; for their eyes then gradually begin to loſe that uncommon roundneſs which produces this defect, and thus to arrive at a greater enjoyment of the beauties of Nature. Perſons who can ſee objects

objects distinctly at a great distance only, cannot, however, be considered as less unfortunate; as they stand in need of glasses, chiefly for the better distinguishing of more minute objects.

The nursery, or the room appropriated to the use of children, is generally the smallest, if not the lowest apartment in the house; so that the infant, having the opportunity to exercise its eyes on near objects only, often becomes more short-sighted than it is naturally. Hence children ought at least to be frequently carried to the window, and have their eyes directed to a distant view. On this account, a nursery enjoying an extensive prospect is much preferable to one where the view is confined. Many persons who see well at a distance in their infancy, injure their sight by reading and writing by candle-light, but particularly females, by fine needle-work; as the eye is thereby too much accustomed to near and minute objects.

One of the bad consequences of short-sightedness is, that people get into a habit of making use of one eye only. The effort of directing both pupils to the object before them is attended with too much trouble; hence they look at it sideways. It would be less detrimental, if they were to use the eyes alternately; but here too it is equally easy to acquire a bad habit; for the eye, which is spared or not exercised, becomes inert and useless. Still worse is the use of a magnifying or reading glass, by which people accustom themselves to shut the

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eye then unemployed. The other, which is thus unduly exerted, ſomewhat ſhifts its poſition, it becomes progreſſively leſs flexible in its internal parts, and perſons who take advantage of this temporary aid, do not find their powers of viſion improve with the advancement of age.

To prevent theſe bad habits, the following advice may be uſeful:—Children ſuſpected of being ſhort-ſighted, ſhould have their eyes directed to an object held cloſe to them; and if they appear to make uſe of one eye only, that eye ſhould be occaſionally cloſed, ſo that they may be obliged to exerciſe the other. When they learn to read, they ſhould be taught to hold the book ſtraight before their eyes; thus they will exert themſelves to diſcover the printed letters at the greateſt diſtance at which they are made to place it. The eyes, by degrees, become accuſtomed to the neceſſary internal change of their poſture, and the child will, in time, certainly improve in the extenſion of its ſight. Many perſons indeed have, at a juvenile age, got rid of their ſhort-ſightedneſs; but there cannot be found one inſtance of this improvement among thoſe who have, either from faſhionable indulgence or neceſſity, habituated themſelves to uſe only one eye.

It is to be regretted, that in ſhort-ſighted individuals the breaſt and abdomen ſuffer much from compreſſion during ſedentary occupations, ſo that they are frequently troubled with hypochondriaſis,

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and, what is ſtill worſe, are ſometimes thrown into a conſumption of the lungs. Though ſtanding at intervals agrees with employments that do not require great mental exertion; yet, in the contrary caſe, it conſumes more ſtrength than is generally imagined; and, in acute reflections, the mind ought not to be fatigued by the body. In this caſe, well-choſen *concave ſpectacles* may be uſed with advantage, ſo that the body may be placed, while reading or writing, in the moſt convenient poſture: for ſuch glaſſes will oblige the wearer to remove the object ſomewhat farther from the eyes.

After ſevere diſeaſes of the eyes, one of them frequently becomes ſhort-ſighted, while the other is ſcarcely, if at all, affected. The conſequence is, that we employ the ſound eye alone, while the weak one is totally impaired by this neglect. In ſuch a ſituation, we ought to uſe glaſſes in reading or writing, one of which ſhould be carefully ſelected for the ſhort-ſighted eye, (according to the rules hereafter to be ſpecified) and the other of plain, clear glaſs, chiefly for the ſake of affording an equal degree of light to both eyes. If, by this precaution, the weaker eye has perceptibly gained ſtrength, we may employ a leſs concave glaſs inſtead of that firſt uſed, ſo that in time it may be ſimilar with the other, and at length the patient be enabled to do without this aſſiſtance.

Eyes which form too extenſive a focus, require no aid, unleſs they be extravagantly ſo. Then, indeed,

indeed, we ſhould not hæſitate to make uſe of convex glaſſes. It is, however, a vulgar prejudice, that by ſuch glaſſes the eye is too much indulged, and rendered ſtill more *far-ſighted*. On the contrary, it is generally improved during the uſe of theſe ſpectacles, and, after the lapſe of ſeveral years, they may again be diſpenſed with.

It is a conſolation in many diſeaſes of the eyes, that a long-continued weakneſs is ſeldom the forerunner of total blindneſs. This fatal event generally happens by ſudden accidents, and is ſpeedily decided.—Adults are not very ſubject to external complaints of the eye, or ſuch as deprive the *cornea* of its tranſparency.

Small round ſpots, hovering before the eyes like ſtrings of hollow little globules connected with one another, are defects of no great conſequence, and of which, perhaps, no eye is completely free.

III. *General Rules for the Preſervation of the Eyes.*

In all employments whatever, let us attend as much as poſſible to this circumſtance, that the eyes may have an uniform and ſufficient light, ſo as to affect the *retina* on all ſides alike.—The eyes materially ſuffer, when the rays of the ſun are ſtrongly reflected from the oppoſite wall or window.

In children, many diſorders of the eye, which would never have had ſo fatal an iſſue, have terminated

nated in total blindneſs, when parents have neglected to provide the cradle or window with proper curtains. For this reaſon, we ought to be extremely cautious in the choice of an apartment appropriated to the labours of the day. We ſhould not place ourſelves directly oppoſite to the light, in reading and writing; we ought rather to take the light in a lateral direction.

A great obſtacle to this arrangement is the change of light in the ſame apartment, by the progreſs of the ſun. Where the ſun dazzled in the morning, we find in the middle of the day the moſt uniform light, which again in the afternoon, particularly in towns, becomes reverberatory, and extremely hurtful. This inconvenience ſhould be remedied, if poſſible, by a frequent change of the room; or, at leaſt, we might produce more uniformity in the light by means of window curtains, or blinds; and it may be obſerved, that blinds of green or whited-brown linen are beſt adapted for this purpoſe.

It is an uſeful practice to protect weak eyes from the deſcending rays by means of ſhades; becauſe the vivid light ſtriking them from above, is thus intercepted. But we ought to conſider, that the lower part of the eye is by ſuch means completely ſhaded; while the upper part of this organ is ſtimulated by the light it receives from below;—a practice which cannot be productive of good conſequences. If the malady be ſituated

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in the upper part of the eye, this conduct is ſtill more improper: for the healthy part is in this manner protected, and that already relaxed is ſtill more weakened.

Darkneſs, or ſhade, is then only beneficial to the eyes, when they are unemployed, when the obſcurity is natural, and conſequently every where extended. To reſt a little during the twilight, is very ſuitable to weak eyes. No artificial darkneſs during the day is ever ſo uniform, but that the eye muſt exert itſelf at one time more than at another, and neceſſarily ſuffer by this change. Perſons with weak or diſeaſed eyes, who ſpend the whole day in an apartment darkened with green curtains, injure their ſight ſtill more by this pernicious practice. It is far more prudent to repair to clear day-light and the freſh air, and to direct the eyes to diſtant proſpects, than to confine them to the cloſe atmoſphere of a room, and to the ſight of near objects.

Laſtly, it is an error, that weak eyes, when employed in minute viſion, ought to have a faint light; for by this practice they are certainly ſtill more weakened. Thus green ſpectacles are very hurtful to ſome eyes, as they deprive them of that light which is neceſſary to a diſtinct perception of objects.

IV. *Of*

IV. *Of the conduct to be obſerved in Weak Eyes.*

The artificial light of candles and lamps is detrimental to weak eyes; not, as ſome imagine, on account of the light being too ſtrong for the eyes, but becauſe the flame of a candle too powerfully illumines the eye in one point, and does not uniformly ſtimulate the *retina*.

The means uſed to prevent the great ſtimulus from the rays of light are, in general, ſo regulated, that the ſcreen may not only cover the flame, but alſo concentrate the greateſt part of the light. Thus the room is darkened, and only a ſmall ſpot above and below the apparatus is illumined; a practice highly injudicious. The ſtudy-lamps, with large round ſcreens, ſeem to be purpoſely contrived to impair the ſoundeſt eyes, by their continued uſe.—The green parchment ſcreens formerly uſed were likewiſe objectionable; for, though they admitted the free acceſs of light on both ſides, yet they produced too great a ſhade before the eyes. The beſt and moſt proper defence of weak eyes by candle-light is a flat ſcreen, projecting about two or three inches over the forehead; or even a round hat, with a brim of a proper ſize.

Thoſe who are afflicted with weak eyes ſhould always make uſe of two candles, placed ſo that their flame be neither too low, nor too high for

the eye. This is a circumſtance of great importance, as the light, when placed too low, is uncommonly ſtimulating and fatiguing. Candles have this advantage over lamps, that their light is leſs offenſive to the eye and leſs pernicious to the lungs; as they do not, in general, emit ſo much ſmoke. But, on the other hand, all candles have the following diſadvantages: 1. that, by their burning downwards, the fatigued eye is progreſſively more ſtrained in the later hours of candle-light; 2. that the unequal light they give is attended with the additional trouble of ſnuffing them; and, 3. that by the leaſt commotion of the air, or, if made of bad materials, they offend the eye by their flaring light.—Hence a clear chamber-lamp, burning with the leaſt poſſible ſmoke and ſmell, is far preferable and more ſoothing to the eye, than even wax-candles. Some of the lately-improved Patent-lamps, originally contrived by M. D'ARGENT, in Switzerland, are well calculated to anſwer every uſeful purpoſe; but, inſtead of the common round ſcreens, I would recommend another, immediately to be deſcribed.

Thoſe *ſcreens* are the beſt, which are applied to one ſide of the light only, which are not larger than is neceſſary to cover the flame, and which ſtill admit a ſmall quantity of light to paſs through them. This is obtained by a ſimple contrivance of taffety, ſlightly gummed, and folded ſo that it can be carried about in the pocket. Theſe little ſcreens

are very convenient in travelling, and are poſſeſſed of the eſſential advantage, that they overſhade only the ſmall angle formed for the individual who is affected with weak eyes, without depriving the reſt of the company of light.—In the day-time, on the occaſion of ſealing letters, for inſtance, the light of a candle or taper is more prejudicial to the eye than in the evening.

In the morning, we ſhould not too much exert the eyes immediately after riſing. Hence it is adviſable to remove the candle to ſome diſtance and under ſhade in the long winter mornings, till the eye be gradually accuſtomed to it. For the ſame reaſon, the window-ſhutters ought not to be ſuddenly opened in very bright day-light. This immediate change, from darkneſs to the cleareſt light, occaſions ſenſible pain even to the ſtrongeſt eye.

Writing fatigues the eyes leſs than reading; for the letters we form on the paper are previouſly imprinted on the imagination, and conſequently require much leſs acuteneſs of ſight, than the ſeries of letters and words we read. It is, for the ſame reaſon, much eaſier to the eye to read our own hand-writing, than that of a ſtranger, however diſtinct. Beſides, the letters and lines in writing are more diſtinguiſhable by the lower part of the blank paper, than the lines in a printed book, or on a manuſcript; in both of which they appear to flow together, and can be kept aſunder only by

great exertion of the eye. The caſe is conſiderably changed, when we endeavour to write remarkably well; when we make uſe of a gloſſy white paper, and particularly when we copy the writing of another perſon with great accuracy—in all which inſtances the ſight is more impaired than in reading, eſpecially by changing the direction of the eyes too frequently to papers, or books of different types.

The extravagant elegance in the letter-preſs of many modern books, the ſplendid whiteneſs and ſmoothneſs of vellum paper, or of hot-preſſed woven paper, and the broad margin injudiciouſly contraſted with the printer's gloſſy ink, are ill calculated to preſerve our eyes. And if the lines be too cloſe to each other, the columns too long, as in our newſpapers, the ink too pale, as is now becoming faſhionable, and the paper of a bluiſh caſt—the eyes are then in a fair way of being totally blinded.

I read in the *Gentleman's Magazine* for April, 1794, a propoſal, to print on dark blue paper with white letters, or on green paper with yellow letters. This plan certainly deſerves a fair trial, though it might meet with great difficulties in the execution. —The eyes would alſo be greatly preſerved, by making uſe of a fine light blue writing-paper, rather of a greeniſh tint, inſtead of the faſhionable white or cream-coloured paper.

Every exertion of the eyes is moſt hurtful immediately after a meal, as well as at any time when the blood is in great agitation.—In the dawn, in twilight, and in moonſhine, we ought not to read or write, nor direct our ſight too attentively to objects.

Refracted rays afford an unpleaſant light, and oblique rays are particularly painful. When we take exerciſe in a long, irregularly-lighted apartment, we feel ſenſible vibrations in the pupil of the eye. The moſt ſuitable apartment, in this reſpect, is one forming a regular ſquare, with large windows to the eaſt, in which there is an uniformly-divided light, or ſtill better by means of ſky-lights. Garret windows afford a bad light; it being generally introduced, as it were, by a funnel, and illumining only one part of the room, while the reſt remains dark.

A ſitting-room is beſt adapted to preſerve the eyes, the walls of which are pale green, without paintings; two or three uniformly high windows, ſo as to give an equal light; (yet ſo contrived as to prevent its being too ſtrong) cloſe and moveable green blinds; a green carpet on the floor; and, laſtly, ſuch ſhutters as may occaſionally leave the upper part of the window uncovered, in order to admit ſufficient light.—To ſit with the back to the window, occaſions a ſhade which forms a diſagreeable contraſt to the ſurrounding light. The writing-deſk, therefore, ought to be placed

ſo, that the laſt window may be on the left hand, and that the right hand may throw no ſhade on the paper, and not too near a corner of the room, as this generally has an unfavourable light. A ſpace ſufficiently broad, between two windows, is a ſtill more convenient ſituation for a deſk; but we ſhould not ſit too near the wall; a cuſtom which is exceſſively hurtful to the eyes.

An oblique poſition of the deſk is the moſt proper; for it preſents to us the writing materials in that poſition, in which we are habituated to place a book, when we hold it in our hands, and from which the rays of light diverge more gradually than from a horizontal table. It is leſs hurtful to the breaſt, to the abdomen, and alſo to the eyes, to uſe a deſk of this form, and to write ſtanding rather than ſitting; provided that the height of the deſk be proportionate to the length of the body, that it ſtand firm, and that both arms reſt upon it, without being fatigued by raiſing them too high.—In *ſtanding* before a deſk, we have this additional advantage, that there is leſs occaſion to direct the eyes upwards, than in ſitting. Hence the converſation between tall perſons and thoſe of a low ſtature is moſt troubleſome to the latter, as they are conſtantly obliged to look upwards.—Thoſe with whom we converſe ought not to ſtand between our body and the light, as it is both rude, and prejudicial to our eyes.

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At night we ought to place the candle ſo that we may receive light from it in the ſame direction as we do from the window in the day-time. Even if it be provided with a green ſcreen, as before deſcribed, a weak eye will not long be able to ſupport its glare in a ſtraight line. Were the candle to be elevated at our back, ſo as to allow the light to come down over our ſhoulders, we ſhould then experience the ſame inconvenience, which attends that poſture in day-light. Hence it is neceſſary to place it ſideways, and to keep the book or paper in a lateral direction.

We ſhould not expoſe ourſelves in a ſtraight direction to objects ſtrongly illumined by the flame of a candle, or fire from a grate. Thus the highly-poliſhed fenders and other fire-irons are injurious to ſight; and not leſs ſo is a ſmooth and ſhining wax-cloth over a table, as refracting too much the rays of light: a green cloth is preferable. In all caſes, the light ſhould at leaſt be of equal height with the forehead; not cloſe to a white wall, and ſtill leſs before a looking-glaſs or other poliſhed body. To walk up and down a room lighted with a ſingle candle, ſo that at one time we have the light full in our eye, and at another are nearly in darkneſs, is very prejudicial to weak eyes. It is better to place the candle in the middle of the room, in order to illumine it more uniformly, or, what is ſtill preferable, to hang it higher than the ſhade of our own body.

Where perſons muſt have a light during the night, it ought to be placed in the next room, or at leaſt within the chimney, that it may be entirely out of ſight. If neither of theſe methods be convenient, we ſhould place it behind or at the ſide of the bed, rather than in an oppoſite direction. For, if this be not attended to, the light may produce very noxious effects during ſleep, even through the cloſed eye-lids. The ſame attention is required, to prevent the rays of the ſun or moon, either directly or by reflection from the oppoſite wall, from ſtriking the eyes of the perſon aſleep.—As ſome men are known to ſleep with their eyes open, it would be adviſable to employ ſomebody to ſhut them, that they may not ſuffer by the accidents before mentioned.

Thoſe who have weak eyes ſhould carefully avoid ſtrong fires and even hot rooms; for heat ſtill more dries the eyes already ſuffering from want of moiſture. Indeed, it is highly probable, that the weakneſs of ſight and early blindneſs, ſo common in this country, are in a great meaſure owing to the bad cuſtom of haſtening to the fire-ſide, whether coming from the cold air, or from the dark ſtreets.

Weak eyes muſt be indulged with ſhady places, and protected againſt every dazzling object. But green arbours ſhould be avoided, on account of the twinkling light occaſioned by the agitation of the leaves. The exerciſe of the eyes ought never

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to be ſuſpended for any conſiderable length of time: too much reſt is hurtful; and to ſit whole hours of the evening without candle-light, is extremely pernicious. It is, however, very ſoothing to the eyes, to let them reſt for half an hour during twilight. This ſhould teach us to adopt the general and ſalutary rule, to riſe with the dawn, and gradually to accuſtom ourſelves to the artificial light of the evening. For a ſimilar reaſon, thoſe who complain of weakneſs of ſight, ought not to reſort to places artificially lighted in the day-time, ſuch as theatres, &c. Even the ſoundeſt eyes muſt inevitably ſuffer by a ſudden change from light to darkneſs, or from darkneſs to ſtrong light.

If it become neceſſary to let the eyes reſt, we ſhould by no means preſs the eye-lids too cloſely together, which, if long continued, is very hurtful. So is ſtrong and frequent friction, which powerfully ſtimulates the nerves and injures the eyes. If we ſit for any length of time with cloſed eyes, we are eaſily overtaken by ſleep, which, though beneficial, ought to be of ſhort duration, that the eyes may not be overheated. As a protection againſt injury from external cauſes, it is moſt uſeful to wear a ſhade at ſuch a diſtance, as may allow the eye free motion, and not keep it too warm. The green veils worn by ladies are, in this reſpect, well calculated to prevent the duſt from entering the eye,

eye, as well as to protect it againſt cold winds, and the burning rays of the ſun.

The common eye-caſes, uſed by travellers, and by artificers who work in ſubſtances abounding with duſt, are, for the following reaſons, improper: 1. the glaſs in the caſe ſtands too prominent, and diminiſhes the horizon; hence, as thoſe who wear them cannot ſee ſideways and downward, but only ſtraight forward, they travel unſafely on an uneven road; 2. the glaſs in theſe caſes being eaſily covered with vapour, both from internal perſpiration and external cold, prevents diſtinct viſion. Theſe eye-caſes might be much improved by making the brim ſomewhat narrower, and ſubſtituting a fine ſilken gauze, or rather a thin plate of ivory, dyed green, with a ſmall horizontal inciſion, in preference to glaſs.

All glaſſes uſed to aſſiſt viſion appear to require ſome effort of the eyes, and, unleſs they be indiſpenſable, they ſhould never be employed by perſons at an early time of life. In proof of this aſſertion, I ſhall only remark, that by looking through a window of the fineſt glaſs, we feel our eyes much more fatigued, than if the window had been open. This is particularly the caſe in looking through coach-windows, where additional injury is occaſioned to the eyes, by the motion of the carriage, and the impure air ariſing from reſpiration.

Green

Green curtains in coaches are, therefore, judicious and proper.

Of all the remedies for preſerving weak eyes (for diſeaſed eyes require profeſſional aſſiſtance), bathing them in pure cold water is the moſt refreſhing and ſtrengthening. But this ought not to be done above three or four times a day; otherwiſe it has a tendency to give an unneceſſary ſtimulus to the eyes. Nor ſhould it be done immediately after riſing in the morning, but only when the moiſture, which during ſleep is depoſited even in the ſoundeſt eyes, is nearly evaporated. This partial cold bath may be repeated after dinner and ſupper, at which times the eyes ſtand as much in need of it as in the morning. Not only the eyes, but alſo the brow, the region behind the ears, ſometimes the whole head, and particularly the upper lip, which is cloſely connected with the optic nerves, ſhould be bathed or waſhed as well as the eyes. In the morning, the eye ought not to be precipitately, but gradually expoſed to the water: and the waſhing ſhould be expeditiouſy performed. In drying or wiping the eye, we ſhould proceed gently and with caution; and immediately after waſhing, we ſhould particularly guard againſt any rays of light, as well as every kind of exertion.

A large piece of ſponge, containing a good deal of water, ſo that it may not too ſoon become warm, is far preferable in theſe partial bathings, to

the warm, ſmooth hand, or towel. The ſponge ſhould be frequently dipped into cold water, and occaſionally allowed to lie for a few moments on the eye, with the head bent backward, while the eye is gently moved and a little opened during the operation.

The bathing of the eyes, in ſmall glaſſes, is leſs advantageous, as the water very ſoon turns luke-warm, and is perhaps too cold, when ſuddenly renewed. Theſe glaſſes occaſion another diſagreeable ſenſation, as their edges will, in ſome degree, attach themſelves to the ſkin, not unlike cupping-glaſſes.

The cold bath, under certain reſtrictions, is uſeful; as it invigorates the whole body, and conſequently ſtrengthens the eyes; but in ſome caſes it may injure them, by propelling the blood too forcibly to the head. This may, in a great meaſure, be prevented by not only waſhing the eyes and the whole head previouſly to entering the bath, but alſo by diving the whole face and head under water.

V. *Dietetical Precepts reſpecting the Eyes in general.*

Above all things, we muſt obſerve the old rule; to try carefully what beſt agrees with us, and to attend to moderation and regularity in our manner of living.

Smoking

Smoking tobacco, and taking ſnuff, are injurious; as by either practice the eye is too much ſtimulated. It is a vulgar error, that people cannot reſign theſe improper habits, without injury to their health. They may be ſafely abandoned at once, though occaſionally preſcribed as medicines.—Tobacco * has only been known in Europe ſince the beginning of the ſeventeenth century, and was long merely uſed as a luxury. This plant is now much abuſed; and thoſe who are once accuſtomed to it, cannot leave it off without great reſolution. To ſuch perſons it does not afford relief as a medicine; their olfactory nerves having become almoſt inſenſible to its ſtimulus. As a medicinal remedy, it ſerves to draw ſuperfluous humours from the head; but in thoſe who uſe it extravagantly, eſpecially in ſnuff, it imperceptibly weakens the nervous ſyſtem, and eſpecially the memory.

After meals, and the above-ſtated bathings, it is beneficial to the eyes to remain in the open air, to direct our looks to a graſs-plat, or to divert them with ſome amuſing employment.—Some

* The tobacco-plant was firſt diſcovered growing wild in South America; in the year 1496 it was alſo found in Saint Domingo; in 1520 in Jucatan; from which laſt place the firſt ſeeds were brought over to Portugal in 1560, by the French Ambaſſador *Nicot*, who gave it its preſent name from the Iſland of *Tobago*, where it grew in great abundance. Hence *Linnæus* calls it by the compound name of *Nicotiana Tabacum*.

have

have obſerved, that their eyes are not ſo ſtrong after they have eaten weak ſoups or broths, as after ſolid food: they further affirm, that their ſight is ſtronger after a meal conſiſting entirely of vegetable aliment, than after a very moderate portion of animal food. Theſe obſervations are far from being unimportant, and, if fully confirmed by experience, they may throw ſome light on the dietetical treatment of the eyes—a branch of medicine that has hitherto been too much neglected.

A ſhort ſleep after dinner can only be beneficial to the eyes of thoſe, with whom this practice does not diſagree; at all events, the eyes ought to be protected from day-light, which would hurt them more than they can be refreſhed by a ſhort ſlumber.—The particular rules reſpecting this practice, I have ſtated in the Seventh Chapter.—The ſteam of boiled coffee, gently applied, has alſo been recommended after dinner to perſons afflicted with weak eyes; but nothing has a more ſalutary tendency, in this reſpect, than to go to bed at an early hour; for moſt people impair their ſight by heavy ſuppers and heating liquors, ſo that their eyes remain inflamed till next day. The ſame, indeed, is alſo the caſe with thoſe who indulge too much in ſleep.

A pure, ſerene air is an eſſential requiſite to the preſervation of the eyes. Fetid exhalations ſometimes inſtantaneouſly affect the eye; hence we ſhould

ſhould avoid the putrid effluvia from marſhes and ditches, or other places in which the air is filled with noxious vapours; for inſtance, the vicinity of colour-ſhops, hartſhorn-diſtilleries, and the like. It is, perhaps, unneceſſary to point out every ſpecies of mephitic vapours to be ſhunned as the enemies of ſight; yet it deſerves to be remarked, that the exhalations of ſtables are injurious, while the ſtalls, and other places where cattle are kept, are far leſs hurtful. Laſtly, the galleries of churches, as well as the higher boxes and galleries of play-houſes, are moſt pernicious places; for the exhalations, aſcending from a great number of people aſſembled below, are extremely detrimental to ſight.

On the other hand, the frequent enjoyment of a pure and freſh air, the occaſional reſort to elevated ſituations, nay, even the expoſure to a moderate wind, are means of improvement. The more vigorous ſpecies of bodily exerciſe alſo, are in a certain degree uſeful; provided we do not exert the eye by reading, writing, &c. before the circulating fluids are reduced to their proper medium.—The application of electricity, which has benefited many weak eyes, by its fluid being conducted through a wooden point, is ſomewhat analogous to the going and ſtanding againſt the wind; as it probably operates more by the gentle vibrations of the air, than by the communication of the electric fluid itſelf.

To

To read in the open air is hurtful to ſound, and ſtill more to weak eyes, unleſs the light of a clear day be modified at leaſt by the foliage of a tree from above; yet even here the vivid light ſurrounding the book is fatiguing.

The greater or leſs intereſt we take in our employments, is of conſiderable importance to the organs of ſight; particularly if they be in a weak ſtate. The more alluring a book or any other amuſement is, the longer we are induced to continue it. Hence the important rule: to reſerve the moſt intereſting labours for the half-wearied eyes; yet, with prudent ſeverity, always to appoint a taſk; for, without this precaution, the ſight, though at a later period, will inevitably experience more or leſs injury from ſuch practices.

The ſtate of the weather has great influence on the power of viſion; hence perſons troubled with weak eyes ſhould not be alarmed, if in a tempeſt or thunder-ſtorm, in rainy, or foggy weather, their ſight be leſs acute, or even much impaired.—Such individuals are eaſily affected by ſtanding too long on cold or damp ground, by a too light dreſs, and particularly by a too thin covering of the legs and feet.

Riding on horſeback is beneficial to weak eyes, as is alſo walking, and riding in carriages. The principal advantage in all theſe exerciſes is, perhaps, derived from employing the eye with a

great variety of objects, none of which occupies the attention too long.

Laſtly, perſons having black eye-laſhes generally poſſeſs greater powers of viſion, than thoſe whoſe eye-laſhes are of a light colour; becauſe the former are a better ſcreen for the eye, and reflect no light from their outſide, by which the image on the retina would be rendered weaker and more indiſtinct.

MONTALDUS gives an account of a perſon whoſe eye-lids and eye-laſhes were completely white; who conſequently ſaw but indifferently in the day-time, but much better in the evening and at night. This man happened to be taken priſoner by the Moors, who dyed his eye-lids black, by which his ſight was much improved: but, as ſoon as the colour was loſt, his viſion alſo became weaker.

Dr. RUSSELL mentions, in his "*Hiſtory of Aleppo*," that the Turkiſh ladies uſually dye the inner ſide of their eye-lids black, not ſo much for the ſake of ornament, as with a view to ſtrengthen their ſight.—It has farther been obſerved, that when we loſe the eye-laſhes, as is often the caſe in the ſmall-pox, the ſenſe of viſion is thereby conſiderably weakened. For a ſimilar reaſon, the hair combed down the forehead, if of a dark colour, will aſſiſt the ſight, as well as any other contrivance over the brow.

VI. *Some additional Rules, addreſſed to thoſe who are obliged to make uſe of Eye-glaſſes.*

THE caſes in which eye-glaſſes may be uſed with advantage, are nearly the following: 1. when we are obliged to hold ſmall objects at a conſiderable diſtance, before we can diſtinguiſh them: 2. when, in order to diſcern objects, we require more light than uſual; for inſtance, when we are obliged to place a candle between the eye and the object; for this is one of the moſt deſtructive practices, by which the optic nerves and muſcles are much injured;—and, as the eye employs itſelf with the object in proportion to the degree of light reflected upon it, the pupil ought to dilate accordingly; inſtead of which, it is forced to contract, on account of the too powerful light produced by the intermediate candle: 3. when a near object, upon accurate and attentive examination, becomes obſcure, and begins to appear covered, as it were, with a miſt or fog: 4. when, in reading or writing, the letters ſeem to flow into one another, and look as if they were double or treble: 5. when the eyes are eaſily fatigued, and we are obliged from time to time to ſhut them, or to direct them to freſh objects, for temporary relief.

In the choice of ſpectacles we need not attend ſo much to their magnifying power, as to the circumſtance

ſtance of their agreeing with our ſight; that is, when they enable us, clearly and without exertion, to ſee at the ſame diſtance, in which we formerly were accuſtomed to read or work. Hence we ought out of a number of glaſſes to chooſe thoſe, which afford the beſt and cleareſt light in every ſtate of the eye. But, if a perſon be ſhort-ſighted, he ſhould chooſe a ſecond glaſs, magnifying a little more than the other, but ſomewhat leſs diſtinct, yet ſo that it may not obſcure the object. This is unpleaſant at firſt, but the eyes in time become accuſtomed to it, and daily improve. If, after ſome time, we make uſe of leſs concave glaſſes, there is no doubt, that in the courſe of a few years, according to particular circumſtances, the defect of ſhort-ſightedneſs may be gradually removed.

He who obſerves this regular gradation with his ſpectacles, may preſerve his eyes to the lateſt period of life. But we ſhould not make theſe changes too ſuddenly, leſt the aid of art be too ſoon exhauſted, and the wearer of glaſſes perhaps be unable to find any of ſufficient magnifying powers. It is farther a hurtful practice, to uſe any other but our own glaſſes, to which the eye has been accuſtomed;—every irregularity is injurious, and the preſervation of the eyes depends chiefly on uniformity, with reſpect to glaſſes as well as to the light, in which the organs of ſight are exerciſed.

In uſing one glaſs only, people accuſtom themſelves to neglect one of the eyes; and, on this account, ſpectacles are preferable. Yet both glaſſes muſt be ſeparately fitted to each eye, and by no means indiſcriminately uſed; for this would increaſe the diſeaſe.—If, however, we make uſe of one glaſs only, each of the eyes ought alternately to be habituated to it.

Many perſons wear glaſſes in the evening, and can diſpenſe with them in day-light. This is rather an imprudent practice; and, if it be not too late, they ſhould chooſe a ſecond pair of glaſſes, ſomewhat more magnifying, and to be uſed by candle-light only. In this manner, the retina would receive an equal proportion of light, at one time as well as another, and the eye longer preſerve its vigour.

Green glaſſes are ſaid to be moſt ſuitable to the eye, ſince they modify the impreſſion of light on the retina. Though this be in a great meaſure true, they cannot be indiſcriminately recommended, and certainly not to ſuch as have weak eyes. Green is indeed pleaſing to the eye, more than any other colour, but, at the ſame time, it ſomewhat obſcures objects, eſpecially at firſt. Thoſe of a vigorous ſight only ſhould make uſe of them as preſervatives, eſpecially againſt the fire or candle-light. But, if white or light-coloured objects appear red, after having uſed green glaſſes for a ſhort time, we ſhould diſcontinue their uſe; as this phenomenon

nomenon is a certain proof, that they will in the end deſtroy the eyes. If the green colour does not in two or three days become imperceptible, but appears conſtantly upon the paper, as it did at firſt, it is a farther criterion that the uſe of them is improper.

Many give the preference to large reading-glaſſes; in order to avoid wearing ſpectacles. It is however obvious, that it muſt be a pernicious practice, to keep the eyes in conſtant exertion, as is the caſe here, where every motion of the hand and the head neceſſarily alters the diſtance. In addition to this inconvenience, the dazzling ſplendour of the rays, reflected from the ſurface of the glaſs, weakens the eye to ſuch a degree, as to render the uſe of ſpectacles ultimately indiſpenſable, with this only difference, that the eyes require greater magnifying powers, than might have been neceſſary without this depravation.

Hence ſpectacles are in every reſpect preferable, as they are not only more conformable to the nature and mechaniſm of the eye, but alſo more convenient: they are uniformly placed before the objects by the imperceptible motion of the head; they leave the ſpace between the object and the eyes open and free; and being generally thinner, and lying at an uniform diſtance before the eye, they preſent the objects more clearly and diſtinctly than reading-glaſſes.

Thoſe who have weak eyes, ought not to employ themſelves, even occaſionally, in a manner that may be fatiguing to the ſight. Particularly hurtful are thoſe occupations, in which one eye only is exerted, and muſt conſequently be placed in poſitions, different from thoſe of the other eye, which is at reſt. For this reaſon, the uſe of magnifying glaſſes, of whatever kind, is more pernicious to weak eyes, if we always uſe the ſame eye, and purpoſely ſhut the other, than if we alternately make uſe of either. On this account, microſcopical inveſtigations are leſs hurtful, if, while one eye be employed, we can keep the other open.

We ſhould not make too frequent trials to diſcover, whether we have improved in ſight, or not; for the exertion neceſſary upon theſe occaſions, is uncommonly ſtimulating and fatiguing.

Spectacles ought to be uſed only for the purpoſes for which they are deſigned; namely, in ſuch employments as require the aſſiſtance of art, and where the eye is always kept at an equal diſtance; for inſtance, in reading or writing. We ſhould not without a full trial make choice of a pair of glaſſes, nor be ſatisfied with thoſe which, at firſt, exhibit the objects clearly and diſtinctly. For objects will not always be at the ſame diſtance before us as they appear at the firſt experiment. It would be proper to try a pair of glaſſes for a

ſhort

ſhort time, eſpecially by candle-light; to uſe them in that poſture of the body to which we are accuſtomed; and, if with the uſual kind of labour, we do not feel our eyes fatigued, but rather ſomewhat relieved, we then ought to adopt theſe glaſſes. But, as it is almoſt impoſſible to meet with a pair of glaſſes in the ſhops, which fit both eyes, there is nothing more abſurd, than to purchaſe ſpectacles ready made. Certain as it is, it may not be generally known, that there is perhaps not one perſon among thouſands, whoſe eyes are both of an equal ſize and conſtitution. For this reaſon, different eyes ſhould be accommodated with different glaſſes; and, if we conſult our intereſt in an affair of ſuch conſequence, we ſhall be cautious in ſelecting for each eye a proper glaſs. The following advice is ſubmitted to thoſe who have no optician at hand:

Short-ſighted perſons, who wiſh for a proper concave or magnifying glaſs, may take the exact focus, or point of viſion, by preſenting the ſmalleſt print very cloſe to the eye, and gradually removing it, as far as they can read the letters diſtinctly, and without much exertion. When they have accurately aſcertained the focus, after frequent trials, let them employ another perſon to take the meaſure of this diſtance, with a ſlip of paper, in the niceſt poſſible manner. An optician, on receiving this meaſure, and being informed at what diſtance the glaſſes are intended to be uſed, will be able to

judge, in a certain degree, although by no means ſo accurately as by a perſonal conference with the ſhort-ſighted perſon.

Such as obſerve their eyes to be inclined to far-ſightedneſs, may proceed exactly in a ſimilar manner. But all eye-glaſſes ought to be furniſhed with double joints or ſprings; as thoſe with ſingle joints are not only inconvenient on the noſe, but what is worſe, they are apt to ſhift the point of viſion with every motion of the head, and conſequently injure the eyes.

Laſtly, in ſuch occupations as require a more or leſs extended view of the objects, for inſtance, in playing at cards, where the diſtance of the objects muſt be frequently varied, it would be extremely injudicious to uſe ſpectacles; as no eye whatever can bear ſuch exertions, without uncommon fatigue. For a ſimilar reaſon, it is hurtful to theſe important organs, to keep the ſpectacles on the head at cloſe work, when by ſome accident we are obliged to ſearch for ſomething dropt, or miſlaid. Thus we force the eye to make uncommon efforts, in ſeeing farther than it is enabled to do, by the conſtruction of the ſpectacles. I need not obſerve, that many good eyes are ſpoiled by ſuch imprudent practices.

CONCLUSION.

THE preceding Chapters contain the principal outlines, relative to the treatment of the human body in a healthy ſtate, ſo far as the limits of this work would admit, without tranſgreſſing too much on the indulgence of the reader.

I ſhall conclude with a few general reflections, and recapitulate, in a conciſe manner, ſeveral uſeful precepts, which have been more fully laid down in former parts of this work.

Moderation, in every reſpect, ought to be the firſt and leading maxim of thoſe who wiſh to live long and enjoy health. Extremes, in the moſt oppoſite things, frequently border on each other. The greateſt joy may occaſion the moſt acute pain; and, on the contrary, moderate pain is often accompanied with feelings not altogether diſagreeable. The higheſt animal gratification, indeed, is cloſely connected with diſguſt, and it is difficult to avoid the latter, after the enjoyment of the former. Hence prudence enjoins us to reſtrain violent ſenſations and affections, before they have attained the higheſt degree.

The illuſtrious MEAD, in his "Medical Precepts and Cautions," originally written in Latin, when treating of the affections of the mind, makes the following

following remarks, the truth of which has induced me to insert them:

"All mankind," says that medical philosopher, "have a natural desire for the enjoyment of pleasures, which are of two different kinds, namely, the sensual and mental.—The former engross the greatest part of men, while those few only "whom kind Jove has befriended," are captivated with the charms of intellectual pleasure. The reason why so great a proportion of thinking beings indulge in sensuality is obvious: it proceeds from being unacquainted with the serenity of mind resulting from a dignified conduct, and the joy that animates a good man, when his reason presides over his passions. But the sensualist, being devoted to grovelling enjoyments, is incapable of relishing the real charms of Virtue, and the superior beauties of Nature. The man who wishes to enjoy true happiness should habituate his mind to cherish Virtue, and carefully avoid the opportunities which excite and inflame the passions.

"Cicero illustrates this by a sentiment of Cato, which he received from the great Archytas, of Tarentum;—"that Nature never afflicted mankind with a more destructive disease than the pursuit of bodily pleasure, which stimulates to enjoyment with ungovernable rashness*." Indeed, the perusal of that great philosopher's writings,

* *De Senectute*, cap. xii.

on

on this ſubject, muſt delight the mind of every rational man; and Virtue's exclamation, in SILIUS ITALICUS, is equally juſt and impreſſive:—

"Pleaſure, by gliding on the minds of men,
"More miſchiefs haſt thou wrought than hoſtile arms,
"Than all the wrath of Gods* !"

"As the rational ſubjugation of the paſſions ſtrengthens the mind, ſo *temperance in diet* renders the body leſs ſubject to theſe turbulent emotions. And this obſervation is applicable not only to individuals who are naturally of a hot conſtitution, but even to thoſe who control their appetites; becauſe moderation is a great means of tranquilliſing the mind."

Cleanlineſs is a principal duty of man, and an unclean or filthy perſon is never completely healthy. It is better to waſh ourſelves ten times a day, than to allow one dirty ſpot to remain on the ſkin. On a place where impurities are ſuffered to clog the pores, not only inſenſible perſpiration, but likewiſe the abſorption by the ſkin is entirely ſuppreſſed; and if the whole body be, as it were, covered with a varniſh formed of perſpirable matter, it is impoſſible that a perſon in ſuch a ſtate can poſſeſs ſound blood, or enjoy good health.

Many diſeaſes originate from an impure *atmoſphere*, but a ſtill greater number from the ſud-

* *Punicorum*, lib. xv. v. 94.

den

den changes of the temperature of the *air*. Hence the neceſſity of expoſing ourſelves daily to ſuch changes, and of renewing the air in the houſe and apartments we inhabit, by opening the doors and windows every clear morning, or during the day, as often as convenient. Indeed, to encounter cold weather, however intenſe, has the effect of bracing the fibres of the ſyſtem in general, and is attended with danger only, when we ſuddenly remove to a warmer temperature. For this reaſon, it is extremely injudicious, and a bad compliment paid to a viſitor, to invite him to the fire-ſide, upon his firſt entering a houſe;—we ſhould better conſult his health, by conducting him to a cold room, or to ſome diſtance from the fire, till the temperature of his body be more equal to that of the apartment.

Every thing calculated to remove or cure diſeaſes may alſo produce them; for, whatever has a tendency to accompliſh uſeful changes in the body, may, under different and oppoſite circumſtances, be attended with the contrary effect. Hence no *medicine* whatever ought to be uſed as daily food—a favourite practice among invalids, valetudinarians, and the votaries in quack medicines.

Feeble individuals ought to eat frequently, and but little at a time: the number of meals ſhould correſpond with the want of ſtrength;—for it is leſs hurtful to a debilitated perſon to eat a few mouthfuls

mouthfuls every hour, than to make two or three hearty meals in one day; yet this obſervation is liable to exceptions, reſpecting thoſe perſons who have naturally weak ſtomachs.

There is no inſtance on record of any perſon having injured his health, or endangered his life, by *drinking water* with his meals; but wine, beer, and ſpirits have produced a much greater number and diverſity of patients, than would fill all the hoſpitals in the world. Such are the effects of intemperance in diet, particularly in the uſe of drink; for neither beer, wine, nor ſpirits, are of themſelves detrimental, if uſed with moderation, and in a proper habit of body.

It is a vulgar prejudice, that water diſagrees with many conſtitutions, and does not promote digeſtion ſo well as wine, beer, or ſpirits: on the contrary, *pure water* is preferable to all brewed and diſtilled liquors, both for bracing the digeſtive organ, and preventing complaints which ariſe from acrimony, and fulneſs of the blood.

It is an obſervation not leſs important than true, that by attending merely to a *proper diet*, a phlegmatic habit may frequently be changed into a ſanguine one, and the hypochondriac may be ſo far altered, as to become a cheerful and contented member of ſociety.

The duration of *work* or *exerciſe* cannot be eaſily aſcertained, with regard to every individual. Generally ſpeaking, we ought to work only when we feel

feel a natural inclination to either literary or mechanical labours. To force ourſelves to any exertions, particularly thoſe of the mind, is productive of imperfect performances.—It is better to exerciſe the mind in fine than in bad weather; but thoſe who are continually making excurſions in the former, cannot uſefully employ themſelves in the latter.

Of the twenty-four hours of a day, we ought, in a good ſtate of health, to devote upon an average twelve hours to uſeful occupations, ſix to meals, amuſements, or recreations, and ſix to ſleep. This would be at once a natural and arithmetical proportion. It is, however, to be regretted that the hours cannot be thus accurately divided.—An induſtrious perſon frequently counts but twenty-three hours in a day; as one and ſometimes even two hours ſlide away imperceptibly.

"Sleep," ſays Dr. MEAD, in the ſequel of the work above mentioned, "is the ſweet ſoother of of cares and reſtorer of muſcular energy, which is waſted by bodily and mental exertions during the day. But exceſſive ſleep has its inconveniences; for it blunts the ſenſes, ſtupifies the mental faculties, and renders both leſs fit for performing the duties of active life. The proper time for ſleep is the night, when darkneſs and ſilence invite and cheriſh it; but ſleep during the day is leſs refreſhing. The obſervance of this rule, if proper for the multitude, is ſtill more neceſſary for perſons

devoted to literary purſuits, whoſe bodies and minds are more ſuſceptible of injuries."

The modern inventions for promoting luxury and effeminacy are really ſurpriſing. It were to be wiſhed, that the ingenious contrivers could be perſuaded, that their pernicious arts reſemble thoſe of the Quacks, whoſe poiſonous productions gradually, though ultimately conſume the vital ſpirits of their victims.—Every new expedient we uſe, with a deſign to diminiſh the labour of man, and encourage indolence, is an additional proof that our age is not in a ſtate of improvement, but rather on the decline. Wretched is the man who requires the aid of Art, more than of Nature, to prolong his life, and to ſupport ſo precarious an exiſtence!—Conveniency leads to effeminacy; effeminacy to general relaxation; and this is eventually attended with total enervation and imbecillity.

"Although pleaſure, riches, power, and other things (concludes the author before quoted), which are called the gifts of Fortune, ſeem to be dealt out to mankind with too much partiality, yet there is a greater degree of equality of thoſe things which conſtitute real happineſs, than is generally imagined. People in the lower ranks enjoy the common advantages of exiſtence more intenſely than thoſe in the higher walks of life. Wholeſome food is acquired by moderate labour, which improves the appetite and digeſtion: hence ſound

found ſleep, uninterrupted by corroding cares, refreſhes the wearied limbs; a healthy progeny fills the cottage; and the ſons perform their father's labour, making his hoary locks ſit comfortably on him. How vaſtly inferior to theſe bleſſings are the delicacies of the affluent, which are ever accompanied with real evils. Their appetites, in order to reliſh their food, muſt be ſtimulated by poignant ſauces, which heat and vitiate the blood, and render the body liable to diſtempers. Their exceſſes diſturb their repoſe; and as a puniſhment for their vices, their ſons, who ought to be the ornament and ſupport of their families, contract diſeaſes from their mother's womb, and are afflicted with infirmities through the courſe of a languid life, which ſeldom reaches to old age. They are frequently tortured with anxieties for obtaining honours and titles, inſomuch that they loſe the advantages of their poſſeſſions, by the vain deſire of new acquiſitions:

'In wealth like this,
'I always wiſh to be extremely poor!'
Horace, Satire I. v. 78.

"But the worſt inconvenience that reſults from Epicurean modes of living is, that by ſupplying the body with ſuperabundant nouriſhment, the faculties of the ſoul are ſtupified, and the paſſions inflamed; while the ſparing and homely diet of the laborious poor neither oppreſſes the bodily functions, nor foſters

foſters a propenſity to vice. Hence, unleſs prudence be a conſtant attendant on opulence, it is, in theſe reſpects, better and more conducive to the preſervation of health and prolongation of life, to live on a ſmall fortune.

"Nor is Nature to be deemed an unjuſt ſtepmother, but a moſt provident and beneficent parent. In ſhort, it behoves a wiſe man, in every ſtage of life,

"To hold the golden mean,
"To keep the end in view, and follow Nature."

LUCAN. Book II. Ver. 381.

"Whoever inveſtigates the imperfections of human nature will find, that as ſome men are vaſtly ſuperior to others in the endowments of the mind, yet, mournful reflection! even the beſt minds are blended with ſome degree of depravity; ſo the healthieſt bodies are often afflicted with diſeaſes; and theſe, being the ſeeds of death, ought to remind us of the ſhortneſs of this life, and that, in the words of LUCRETIUS,

"None have a right to life, all to its uſe."

COROLLARY.

A LUXURIOUS life, and diſſolute manners, not only impoveriſh a people, but ultimately depopulate the country itſelf. Such miſchievous conſequences can be averted only by laws wiſely enacted, duly adminiſtered, and experimentally adapted to the natural capacity and diſpoſition of a people: for, if their artificial propenſities and deſires be not controlled in time, and directed to uſeful ends, the citizen muſt degenerate into a feeble and irreſolute ſlave, and his progeny will gradually wither away, like a plant in a foreign ſoil.—Thus Rome was ſubdued, when ſhe departed from her ancient ſimplicity of manners, when ſhe adopted foreign and effeminating refinements, and when her feaſts and public amuſements became too frequent.

THE END.

POSTSCRIPT.

IT has been frequently and juſtly remarked, that popular books on medical ſubjects are generally deficient in their practical application; inſomuch that they leave the reader doubtful, *whether* and *when* he is to apply for profeſſional advice. As my deſign, in theſe Lectures, has not been to lay down particular rules for the diſtinction and treatment of diſeaſes, but rather for their prevention, and conſequently for the preſervation of health, I think it my duty to remark here, that a work ſeems to be wanting, which ſhould impart inſtruction to general readers, how to diſtinguiſh diſeaſes, and how to treat them by a due and ſtrict attention to diet and regimen, as well as to regulate the habits, peculiarities, temperament, and, in ſhort, the whole ſtate of the patient's mind and body:—ſuch a work being a deſideratum of the preſent age.

When I began the reviſal of theſe Lectures, for the ſecond edition, I had it in contemplation to give the outlines of a treatiſe correſponding with this deſcription: but being confined within the

limits of a ſingle volume, and conſcious that a mere ſketch of ſo extenſive and important a work could be of little if any *practical* benefit, I have purpoſely delayed the publication of the whole to another year, when a ſeparate volume ſhall conclude my dietetical labours.

Having treated, in the preſent volume, of almoſt every ſubject that relates to the management of the human body, in its *healthy* ſtate, my next work ſhall be entirely appropriated to its treatment in a *diſeaſed* ſtate. It ſhall comprehend an accurate and clear deſcription of Diſeaſes, together with a plan founded on the rules of experience, how to treat and eventually to cure them, eſpecially thoſe of a chronic nature. The adminiſtration of medicine ought, in ſuch a work, to be only a ſecondary mean of removing diſeaſe, as it will be admitted by the moſt enlightened and candid of the Profeſſion, that, by ſtrictly medical remedies, we can cure *ſymptoms*, and afford occaſional alleviation of pain; but that we cannot effect a favourable change in the nature and progreſs of a diſeaſe, whether chronic or acute, without due attention to food, drink, air, ſleep, exerciſe, or reſt, &c.

Hence I hope to be exempt from the charge of preſumption, when I venture into a larger field of inquiry than has hitherto been explored by practitioners; for, as novelty is not my object, though I think that too little has been done by profeſſional men, in guiding the unhappy ſufferer, and aſſiſting him

him with thoſe ſimple remedies which are placed more immediately around him, I ſhall enter upon my propoſed work with the confidence ariſing from the importance and utility of the undertaking in which I am engaged.

It is much to be regretted, that the boundaries between ſafety and danger cannot be perſpicuouſly aſcertained in a popular book, without deviating from the uſual terms and definitions adopted by medical writers: but I ſhall not heſitate to avail myſelf of ſuch familiar phraſes and expreſſions as will render my works intelligible to the generality of readers. To afford a ſhort ſpecimen of this deviation, for which I allege the reſpectable authority of the late Dr. Tissot, I have ſubjoined a few Queries, which ought to be diſtinctly anſwered by individuals who conſult a phyſician, whether perſonally or by letter. Indeed, it is not always an eaſy or practicable taſk to form an accurate judgment of the ſtate of a patient, without an interview, let his caſe be ever ſo accurately and circumſtantially deſcribed: yet moſt of the difficulties will be removed, if the following queſtions be anſwered with candour and preciſion. For, as the ſucceſs of the medicine entirely depends on a previous knowlege of the diſeaſe, this knowledge can, in ſuch caſes, be derived only from a clear and faithful account communicated to the phyſician.

General Queſtions.

Of what age is the patient?

Had he previouſly enjoyed perfect health?

In what manner has he lived—frugally or luxuriouſly?

How long has he been ill?

How did the diſeaſe commence?

Is he diſpoſed to be feveriſh?

Does the pulſe beat ſtrongly or weakly?

Has the patient ſtill muſcular ſtrength, or is he much debilitated?

Does he remain the whole day in bed, or alternately walk about?

Is his ſtate the ſame at all hours of the day?

Is he uneaſy or quiet?

Is he troubled with heats or ſhiverings?

Is he afflicted with pains in the head, throat, breaſt, ſtomach, abdomen, thighs, or the extremities?

Is his tongue dry, accompanied with thirſt; diſagreeable taſte in the mouth; nauſea; and has he an averſion to, or appetite for food?

Has he any ſtools, and how often?

Of what appearance and conſiſtence are the excrements?

Does he evacuate urine freely and copiouſly?

Of

Of what colour and conſiſtence is the urine—is there any ſediment in it?

Is he troubled with night-ſweats?

Does his ſkin feel ſoft and pliable, or dry and parched?

Is there any expectoration, and what?

How is his ſleep—quiet or diſturbed?

Does he breathe with or without difficulty?

To what mode of diet and regimen has he been accuſtomed ſince the commencement of the preſent complaint?

What remedies has he uſed, and with what effect?

Has he ever before been attacked with the ſame malady?

In female and infantile diſeaſes, there occur circumſtances peculiar to the ſex and age;—theſe, as well as the preceding general queſtions, require to be attended to, in conſulting a medical man.

Queries relative to Females.

Do the menſes appear regularly, and in moderation?

Is the patient pregnant, and how long?

If in child-bed, how was the delivery—ſucceſsful, or attended with difficulty?

Were the diſcharges eaſy and regular?

Has the patient a good breaſt of milk?

Does ſhe ſuckle the child herſelf?

Is ſhe ſubject to *fluor albus*, hyſteric fits, &c.

Queries relative to Children.

What is the exact age of the child?

How many teeth has it, and has it ſuffered much pain in teething?

Is it ricketty?—Is it of a ſtature correſponding with its age?

Has it had the ſmall-pox—natural or inoculated?

Has it a large and hard belly, with ſtrong, or emaciated limbs?

Does it ſleep quietly, or ſtart up, grind the teeth, ſcream, &c.?

Does it diſcharge worms, and of what kind?

If worms are ſuſpected to exiſt in the child (and the ſame obſervation will apply to adults), it ought to be examined whether ſome of the following, that is, at leaſt four or five of the principal ſymptoms (marked with *italics*) concur, which warrant ſuch a concluſion:—viz. Slight colic pains—frequent diſcharge of water from the mouth—*fetid breath*—*itching of the noſe*—a ſwollen or chaped upper lip and noſe—a ravenous appetite for, or averſion to food—oppreſſion at the ſtomach—vomiting—*an effort to ſwallow during ſleep*—coſtiveneſs, or diarrhœa—*bloody excrements*—*ſudden and frequent inclination to go to ſtool*—a large belly and thin limbs—continual thirſt—occaſional debility, and ſadneſs—*frequent change of colour*—languid eyes, with a livid hue around

around them, and ſtanding half open during ſleep — terrifying dreams — frequent ſtartings of the tendons—*grinding the teeth*—uneaſineſs and anxiety —*a milky urine*—palpitation of the heart, fainting fits, convulſions—*a profound and long ſleep—cold ſweats, appearing and vaniſhing ſuddenly*—temporary dimneſs—dumbneſs, or difficulty of ſpeech —weakneſs or lameneſs of the joints—*corroded gums*—*frequent hiccough*—a ſmall and irregular pulſe—delirious fits—*a ſlight and dry cough*—*evacuation of thick, ſlimy matter*—worms diſcharged from fiſtulous ulcers, &c.

Beſides the general queſtions which ought to be made and anſwered in all diſeaſes, thoſe likewiſe muſt not be neglected which more immediately relate to the preſent affection of the patient. For inſtance, in a quinſey, we ought to be informed of the particular ſtate and condition of the throat:—in diſeaſes of the breaſt, the ſeat of the pain, the ſtraitneſs of the cheſt, the nature of the cough, and expectoration, ſhould be diſtinctly mentioned. It would be uſeleſs here to enter into farther particulars, as the intention of theſe queſtions muſt appear ſelf-evident to every intelligent reader: and although the queries appear numerous, they may be eaſily anſwered, and in as few words as they were formed.

The immortal Tiſſot obſerves, in his valuable work "On the Diſeaſes of Country-people," that it would be a deſirable object, if perſons of all ranks,

in their letters to phyſicians, were to adopt a plan ſimilar to that above ſpecified, as this would be the means of inſuring ſatisfactory anſwers, and preventing the neceſſity of repeating their applications, and explaining the contents of former letters.

LISSON-STREET, PADDINGTON,
Auguſt 20, 1799.

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